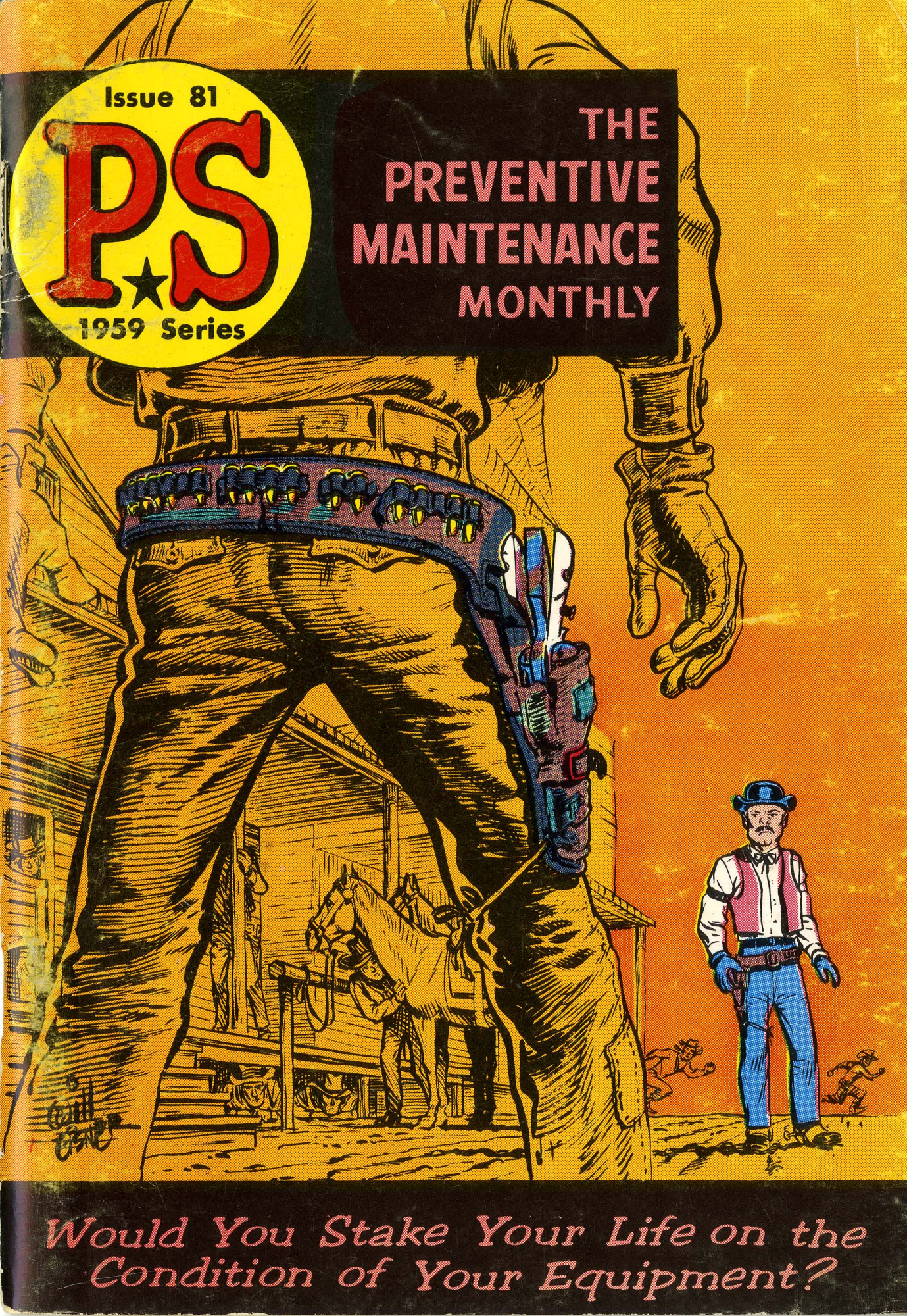
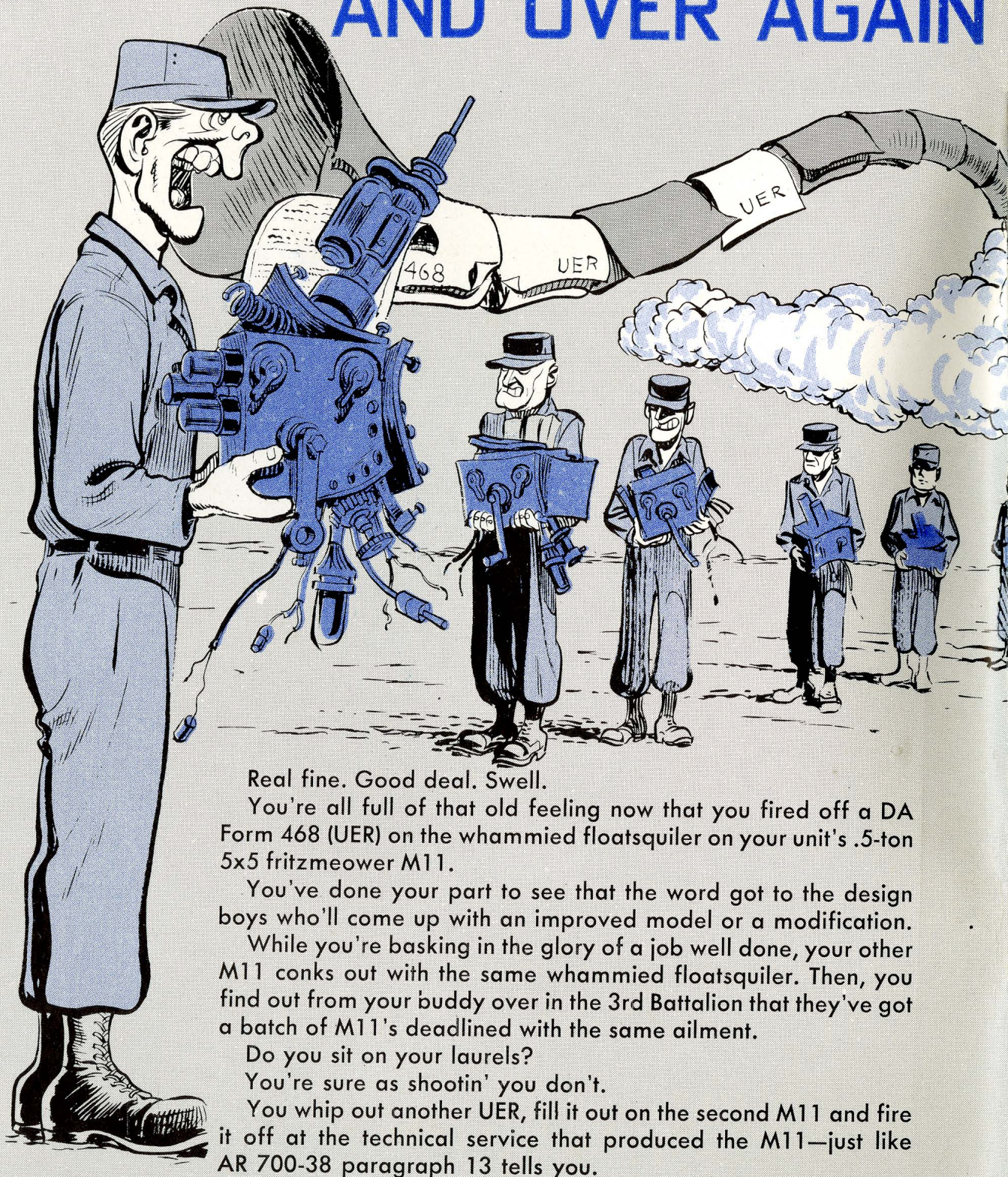

Issue 81
PS
1959 Series
THE PREVENTIVE MAINTENANCE MONTHLY
Would You Stake Your Life on the Condition of Your Equipment?

SAY IT...

OVER—AND OVER—AND OVER AGAIN



Real fine. Good deal. Swell.

You're all full of that old feeling now that you fired off a DA Form 468 (UER) on the whammied floatsquiler on your unit's .5-ton 5x5 fritzmeower M11.

You've done your part to see that the word got to the design boys who'll come up with an improved model or a modification.

While you're basking in the glory of a job well done, your other M11 conks out with the same whammied floatsquiler. Then, you find out from your buddy over in the 3rd Battalion that they've got a batch of M11's deadlined with the same ailment.

Do you sit on your laurels?

You're sure as shootin' you don't.

You whip out another UER, fill it out on the second M11 and fire it off at the technical service that produced the M11—just like AR 700-38 paragraph 13 tells you.

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(And don't forget to remind your buddy in the 3rd Battalion to do the same, too.)

Why?

Well, the design boys like to know how many, where and why. If only one M11 in the whole Army flunked out with a whammied floatsquiler, then there wouldn't be much of a problem.

But, if M11's are going out all over from the same cause, then the designers will saddle up and come ridin' hard and fast with a fix or with a new design.

Let 'em know...every time. Also let 'em know when the fix or new design is no good.

Use DA Form 468 (UER). It gets results.

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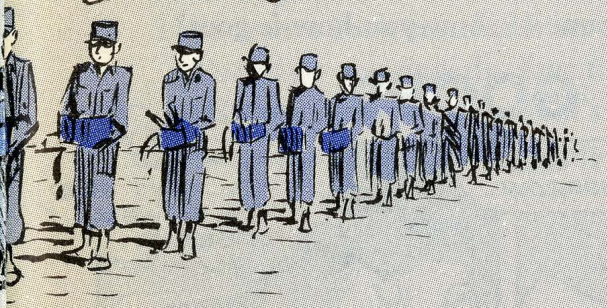

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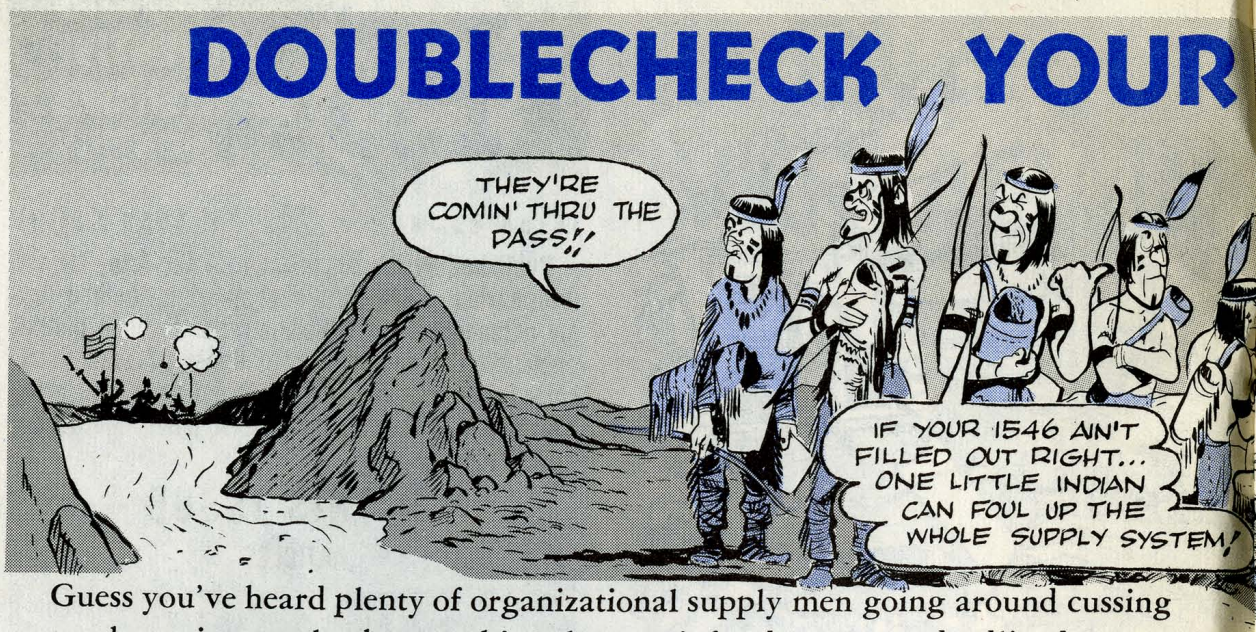
DOUBLECHECK YOUR



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Of course you realize, though, that most of the cussing comes from not understanding what goes on at the next supply echelon. So, for the I-never-figured-it-that-way types, how about a leetle friendly game of show-you-how-it-goes?

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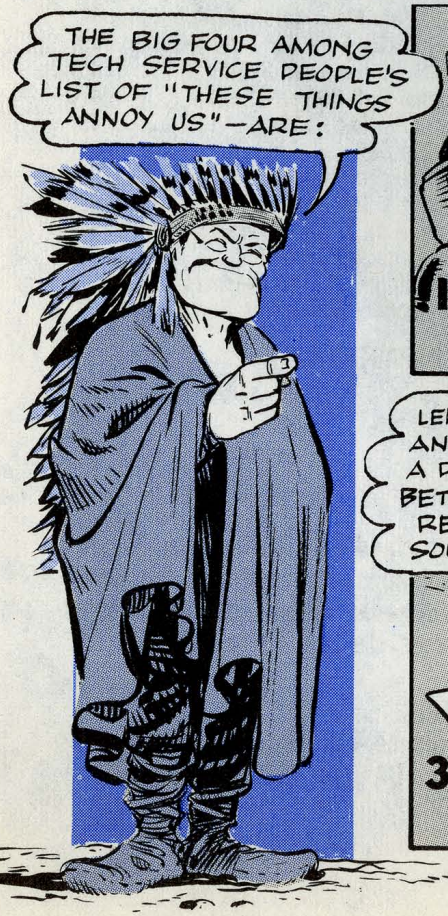

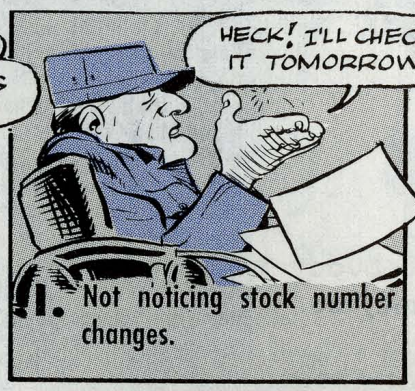

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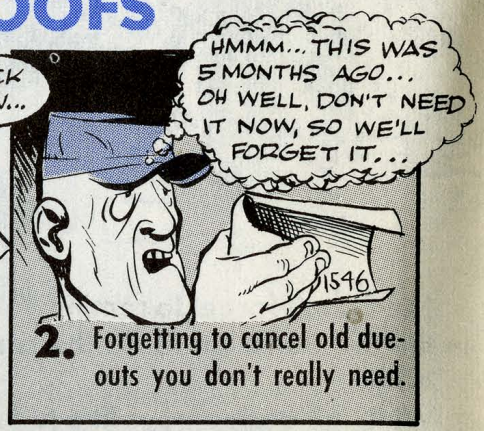
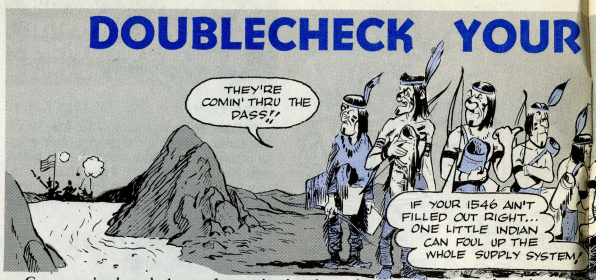


2. Forgetting to cancel old due-outs you don't really need.

3. Getting mixed up on **initial** and **replacement** demands.

4. Not making use of the daily request schedule to keep up your authorized level from day to day.

DOUBLECHECK YOUR 1546



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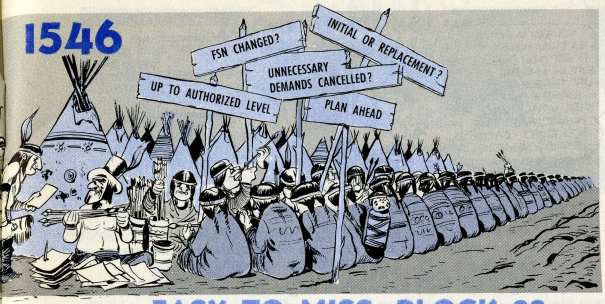
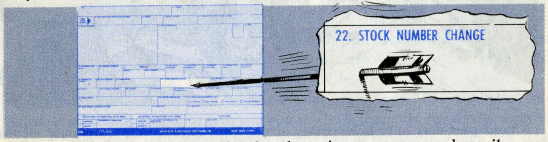


EASY TO MISS—BLOCK 22

Here's an important block that can pass you right by, if you're not looking in the right direction, when that blue shipping copy (No. 1) of your DA Form 1546 comes back from tech service supply.

Nobody's arguing the fact that spotting one out of 36 blocks puts the percentages against you. But that's no excuse for not being up on all the stock number changes tech service supply lets you know about...and Block 22 is the way they do it. So, watch it—heah?



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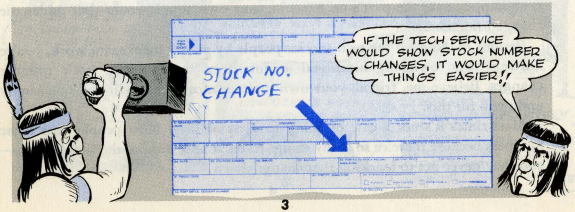

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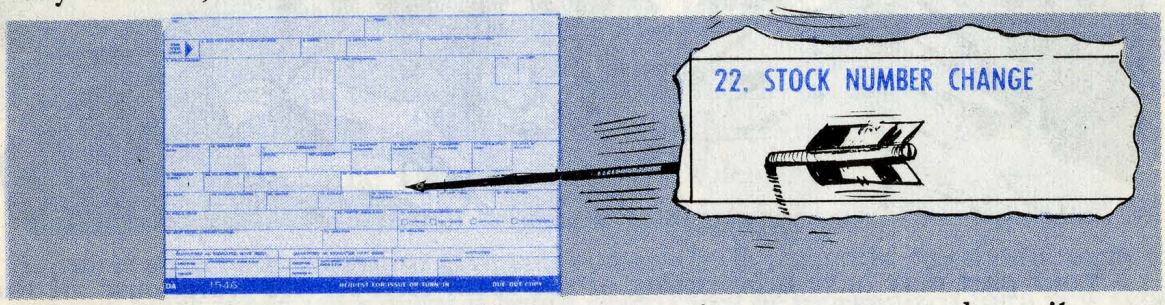

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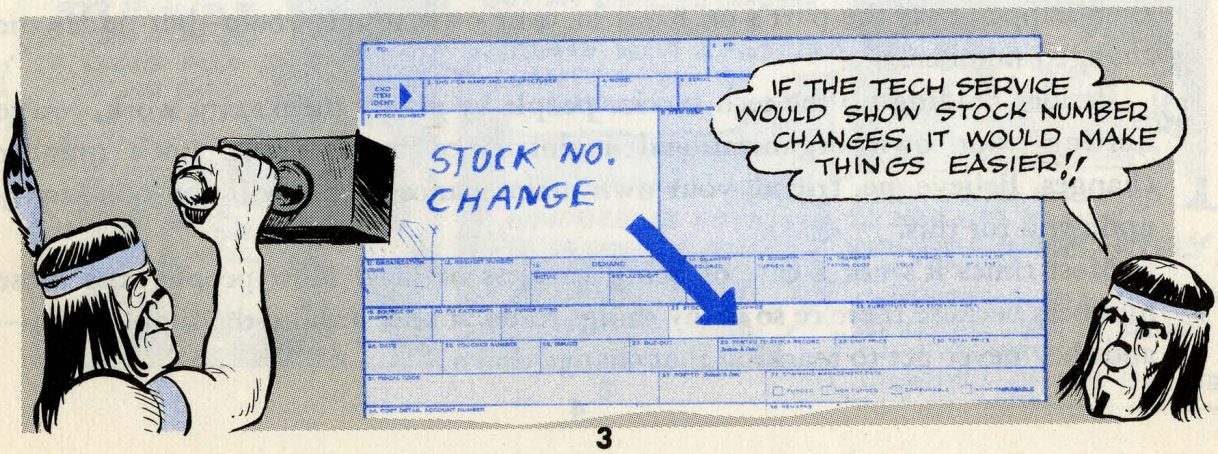


IGNORE IT AND...

Since each tech service is set up to handle **good** stock numbers **fast** and **bad** ones **slow**—every old superseded number that comes through on a 1546 gets sidetracked. Each tech service supply unit has a man sitting at a special desk who checks out old numbers to see if he can cross reference them to the new, or good, ones.

Depending on how many bad numbers he gets and how many different files he has to go to—not to mention digging through superseded publications—that's how long it's going to take him. Then, maybe days later, this old-number man hands your 1546 back to the good-number man, who sends your stale 1546 off to the warehouse.

Your part may have been sitting at the **local** tech service warehouse all this time—but the warehouseman can't do a thing for you until he gets your checked-over 1546. When there's a due-out involved, you'll be waiting even longer. Could even happen that the part's on hand in your own supply room—but under the changed number.

Besides holding up the tech service people by giving them extra work, you're hurting your own organizational maintenance by skipping stock number changes. Believe me, friend, your own maintenance people will not look kindly upon you for this.

Most times it's not a case of being careless or lazy. Most people miss those numbers because there're so many things to do at once around the supply room—and they never get to marking that change down.

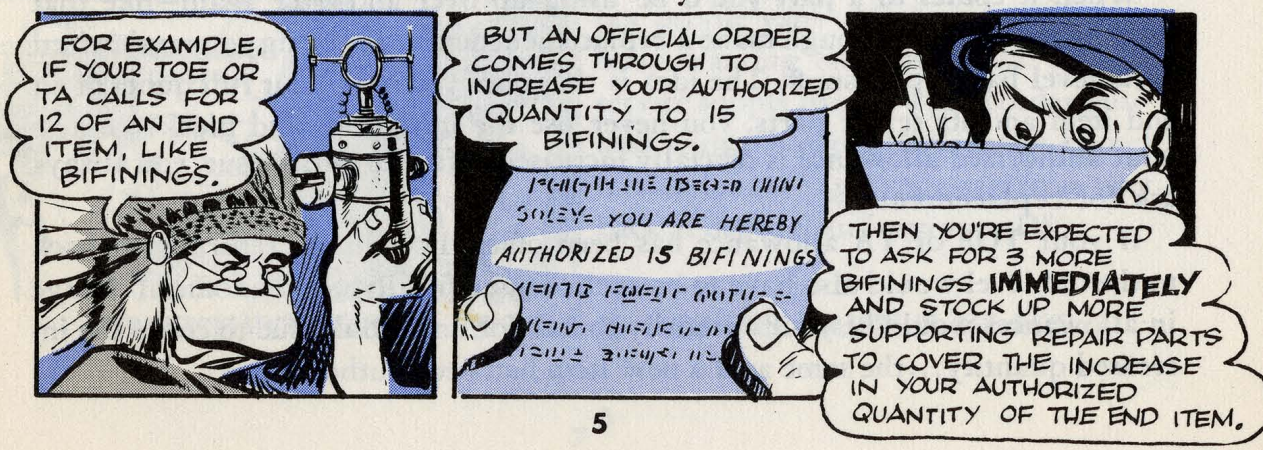
It's best to do it immediately . . . if not sooner. Let the mechanic wait an extra minute or two, so you can supply him better next time.

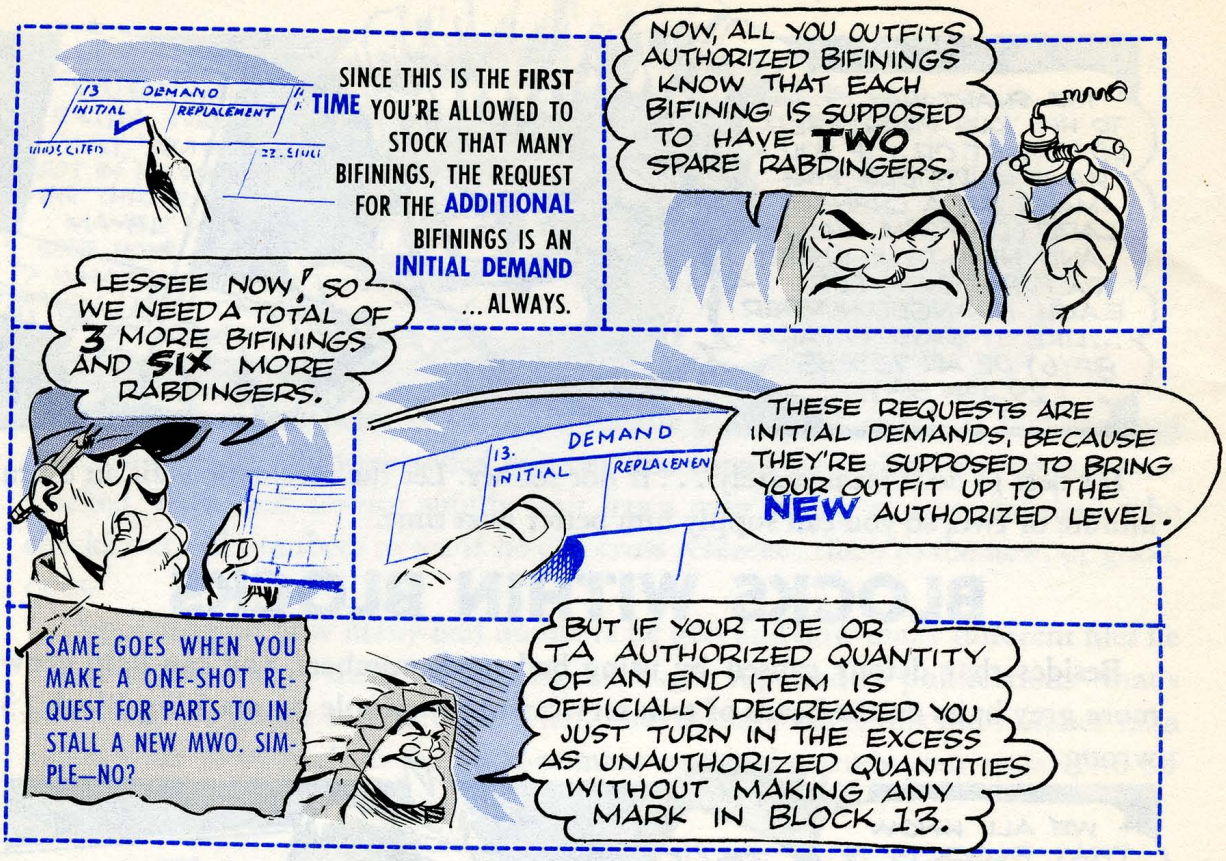
BLOCKS WITHIN BLOCKS

Besides that detour caused by using bad stock numbers, you can help grow more grey hairs on the heads of tech service supply people by marking Block 13 wrong.

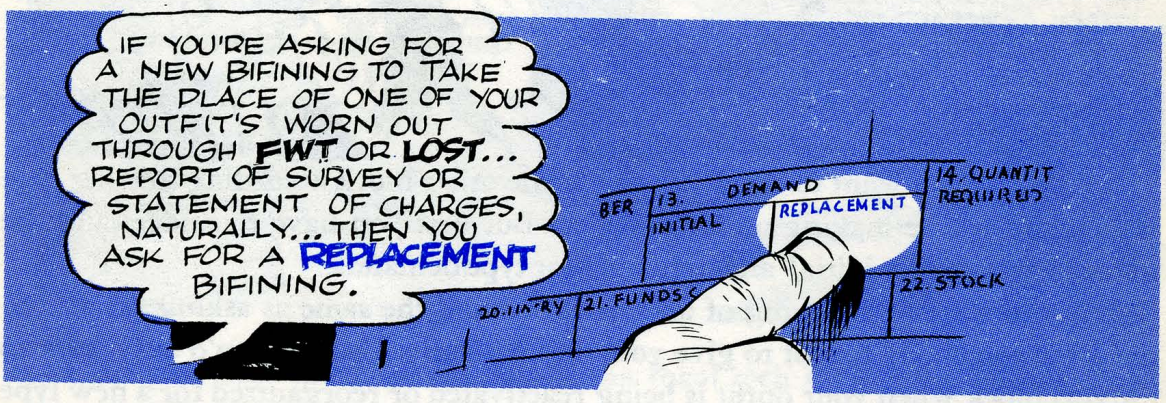
Naturally, you want to check off one or the other block according to what type of demand you're making on tech service. But first you have to understand the difference between initial and replacement type demands.

You can start by thinking of an initial demand the same as asking for an initial issue somebody forgot to give you automatically. Usually you'd only want to use this block when your outfit is being reactivated or reorganized for a new type of mission...or a new item's authorized for your outfit.





REPLACEMENT'S A REPEAT DEAL



When it comes to a part you'd be using up over and over again—like that rabdinger—you sure enough make a replacement demand to bring your authorized parts level back up to snuff. The idea is that once you have your full quota of an end item and its repair parts, you never use the initial demand block... unless your authorized allowance is officially increased. After an initial issue, you **always** ask for **replacements.**

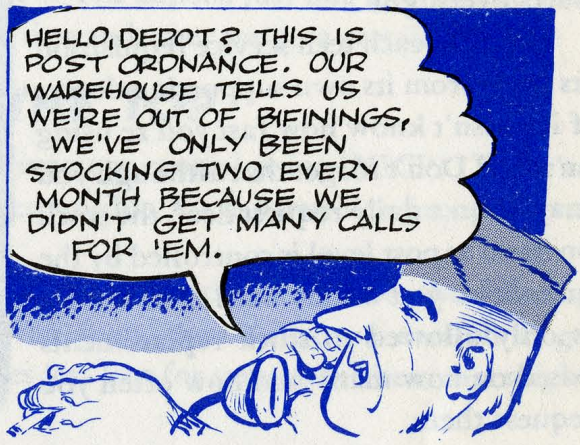
If your TOE or TA allowance has been officially reduced, returning it back to the old level would also have to be spelled out officially. So, that official change in allowances would be your authority to ask for an **initial** issue to cover the increased quantity... the same as if a new item had been authorized.

OTHER SIDE OF THE FENCE

Here's how you get it in the neck when you ask for an initial issue that should've been a replacement issue. Whenever the clerk up at tech service supply sees the initial block checked off, he puts that demand on a separate record, which goes to the people upstairs **for info only.**

That's because initial issues don't tell much of a story on what will be needed in the future. After all, you may never need to ask for that item again or—if you do—you'll ask for it next time as a replacement.

But when the same tech service supply clerk sees a replacement demand, he marks it on his balance sheet for that item. That's because the Army plans how much it's going to buy on how fast an end item and all its repair parts are being used up and worn out. It takes an accurate record of replacement demands to show this.



The way the Army figures, if an item doesn't get asked for too often, there's not much point in keeping too many extras in stock.

So, it's worked out a system where each tech service supply point has to show **at least three demands for any one item in a 180-day period.*** If 180 days go by and only two demands were recorded, your tech service supply support has to ship its stock of that item back to the depot. Tech service people call this a **fringe item**...because it's not in regular demand...hardly ever gets asked for by you, in other words.

So, the army's wasting maintenance time and space storing this item at direct support supply points. But once the depot people yank this item back...anybody wanting one has to ask its tech service supply to start a mail order business with the depot. Everybody knows it takes longer to get your part from way back at depot than from your DS.

*TRANSPORTATION CORPS AIR ITEMS HAVE TO SHOW THREE DEMANDS IN 360 DAYS.

DAILY DOES IT

A man'd have to be a fool not to take advantage of the daily request deal the Army allows. It wasn't too far back you had to sit around for 15 days waiting to put in your request to tech service supply. Now that the daily deal is here with the one-line-item system, a lot of people just let it slide.

So what happens? Comes an emergency deal on maintenance or a big inspection and everybody's running around like chickens without heads. All the back demands saved up for the last minute put a strain on tech service supply people they just can't take. You can't really expect them to come through with all those parts overnight.

How can each tech service requisition its parts from its own supporting depot, if it doesn't know how fast you're using an item? Don't forget that although you may be on a daily request deal, the stock on hand at post level is controlled by the quantities you order. Each tech service is only allowed to stock replacements based on how many and how often you request them.

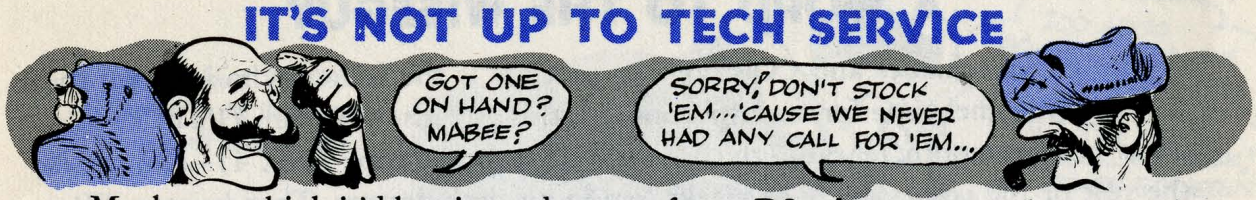
Say you're allowed 10 of one item and you wait until nine are gone before you ask for more. All this time you're not making out any requests—and your tech service supply support figures you're not using up or wearing out any of that item. So, it has to cut back on its requisitions to the depot.

Then—one fine day you wander in and surprise him for nine...next guy hits him for 12...man after that wants eight. Meanwhile, tech service stock records show only one replacement demand in the last three months. So, your tech service was figuring that a stock of five on the shelf should have been enough to cover everybody for the next six months . . . even allowing for a few extra demands.

But here it is time for maneuvers and 29-5=24 due-outs. Great! Let's not forget the rest of the outfits your DS also supports...they haven't shown up yet. That means tomorrow, or the next day, there'll be more demands for the same item.

The result: Everybody gets chewed out and gigged across the board. You can't even accomplish your mission without maintenance to back you up...and there's no maintenance to speak of without a steady flow of replacements on end items and repair parts.

IT'S NOT UP TO TECH SERVICE



Maybe you think it'd be nice and smart of your DS to keep an extra large supply stock on hand to cover these emergency situations. But sooner or later that excess would wear off and, meanwhile, the depot people wouldn't see any requisitions coming in from the different tech service support outfits. It'd be the same deal on a higher supply echelon—that's all. The depots, just like tech service support units, have to go by the record of demands they get in a certain period.

UP AT THE TOP

Depot paperwork goes to a national inventory control point (NICP). There're a lot of them around—each one being responsible for a particular group of end items and its repair or spare parts.

The people at the NICP's do the actual buying for the Army from the different manufacturers. If they buy too little of an item, there's just not enough to go around. If they buy too much, that leaves less loot for some other item that might be in short supply.

Let's face it...the Army's only got so much money to spend on supply each year. So, the whole deal turns into a budget balancing act—since there isn't enough money to buy as much of everything as the Army would like to buy.

So, when your demands don't come in at a regular rate...as close to daily as possible...you throw the whole supply system off its feet. If the supply system runs into situations where it gets three times as many demands in one period as it got in the period before, it just can't predict how many it will need next time.

So, how does it figure out how much to buy? That forces the people at the top to guess. The more guessing they do have to do, the more due-outs you'll probably get at using unit level. But a steady flow of demands lets the higher supply-maintenance echelons set up a demand rate for each period. That gives them something more to go on than plain guesswork.

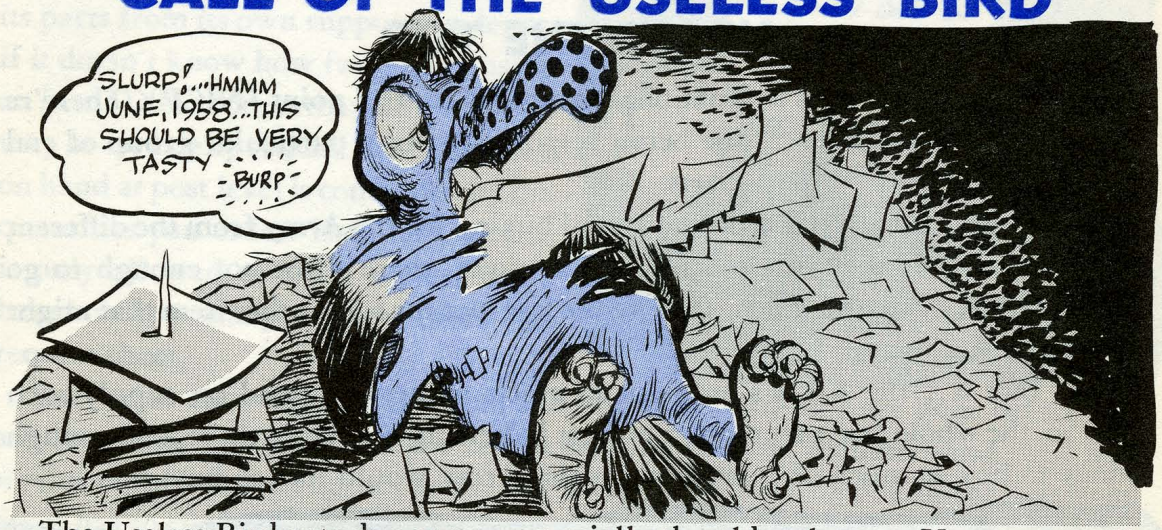
(For anybody interested in doing some more talking on this particular subject, Half-Mast says he can answer all questions off the top of his head.)

A WORD TO THE WISEGUY

The guy mechanics and CO's don't appreciate is the fellow who loafs on the job until it comes time for an inspection. So, this guy just writes up a lot of 1546's, dates 'em last month, tears out the brown unit suspense copy (No. 4)—and tosses the rest of the copies away or stacks 'em in his desk drawer. Then he says: "I'm covered."

Well, maybe he can bluff his way through an inspection or two, but what happens when it's time to go on maneuvers? Like the old story goes . . . you just can't run equipment on paper. Ever see a truck rolling along on 1546's used as tires?

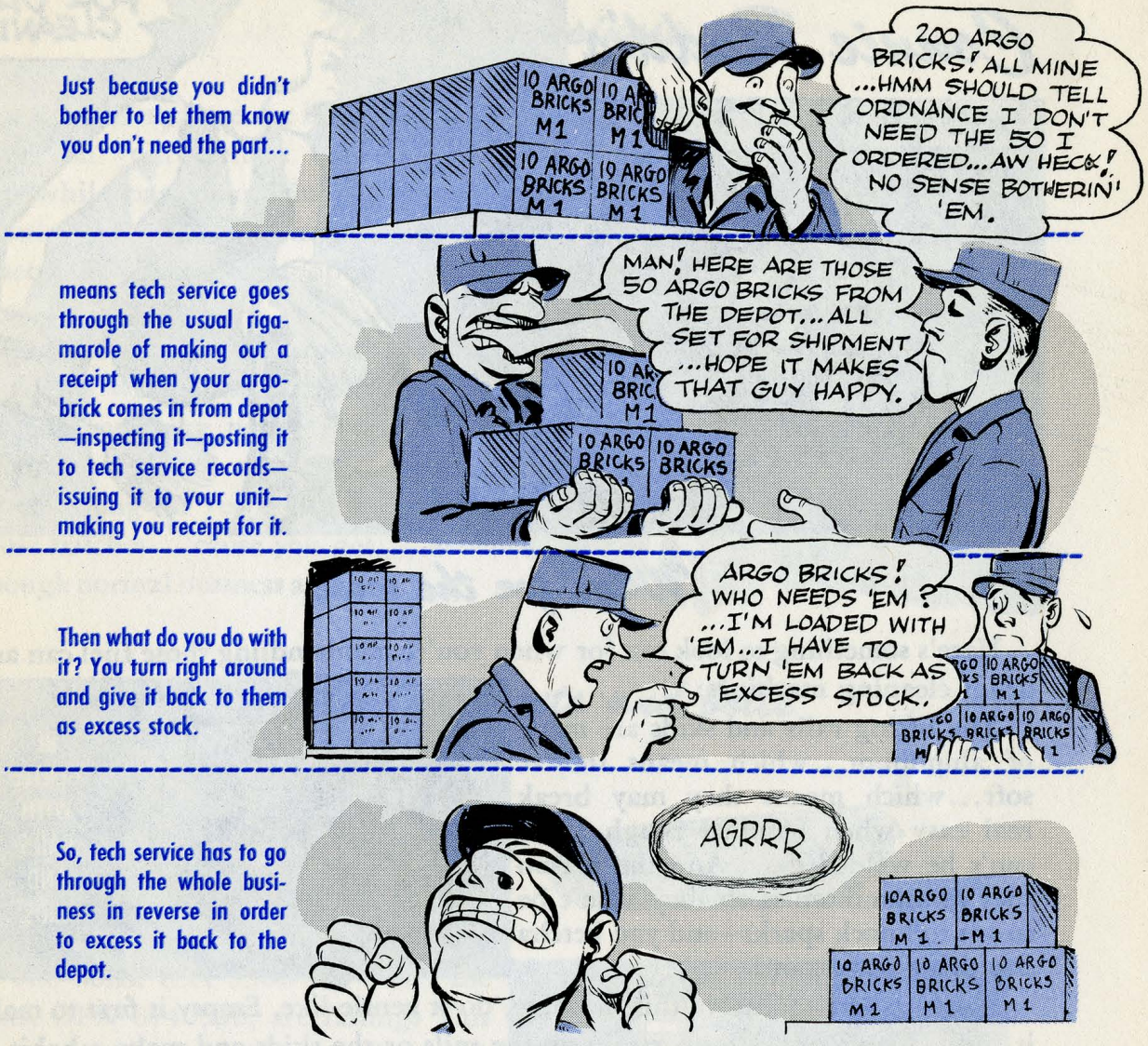
CALL OF THE 'USELESS' BIRD



The Useless Bird eats due-outs... especially the old stale ones. You can usually tell when he's in the area by his strange call: CANCEL 'EM...CANCEL 'EM! Most of the time he gets fed by tech service supply people, but you can toss him a tasty due-out or two every now and then. An open due-out on an item you don't need any longer just wastes a lot of supply time.

Just to show you . . . maybe you've already come by that argobrick you put in for one cold December. Could have been picked up by a lateral transfer with the outfit next door—or else you might have turned in the whole housing that argobrick belongs to as an excess or obsolete end item. Anyway, you forget all about that 1546 your outfit turned in to tech service. After all, it could have been written up by the man you replaced, if you're a newcomer to the outfit. (Then, there are some fools who think that moonlight requisitions can solve their problems).

Well, maybe you're happy since you've got your argobricks or don't need them any longer. But the poor old tech service people can't forget about that 1546 without your say-so. They've still got to fill that demand of yours no matter how long it takes. Sometimes, though, they may ask you to check over whether you still need all of your old due-outs to be filled—and suggest that you cancel them.



Some fun—huh? Sure it is! But all this time they're wasting on your crummy argobrick means taking away valuable time from working on other parts that you **really** need. Multiply this sort of deal by 10 or 20 times and you've got a real delaying action up at tech service supply.

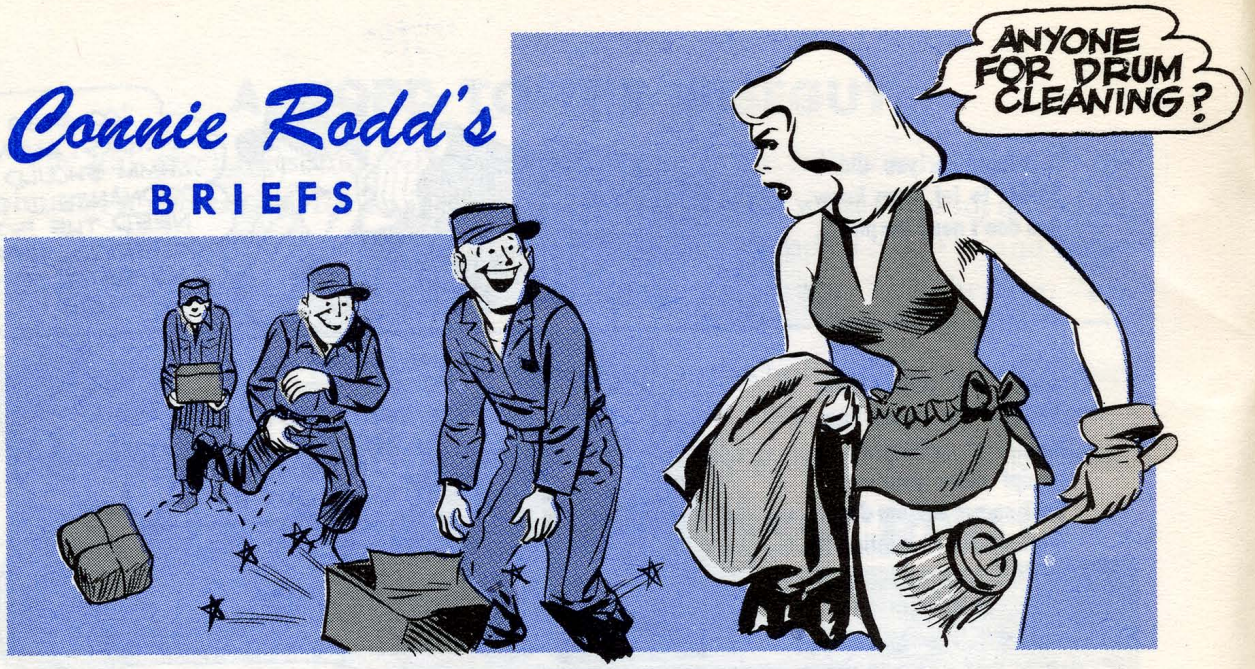
BE HAPPY IN YOUR WORK

Doesn't hurt to remember that these little bits of cooperation are remembered by your kindly tech service friends... little things like canceling unnecessary due-outs, picking up stock number changes, asking for immediate replacements and using the replacement instead of the initial demand block on your 1546.

Let's look at it this way. If you figure you can be careless about these little things—why shouldn't the tech service people figure the same way when it comes to helping you get your parts faster. The Army needs that old cooperation bug to keep everybody happy in their work.

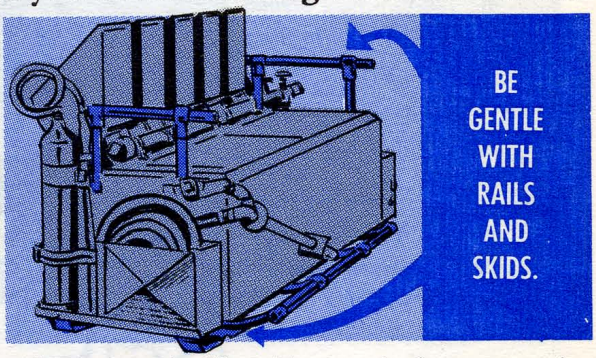
The happiest supply man I ever saw was the one who got the three-day pass for being low man on gigs.

Connie Rodd's BRIEFS



Why's for the wise

. Here's something to look out for when you're manhandling those fuel can and drum cleaning machines:



The lifting rails and skids are made of aluminum...which means they're soft...which means they may break real easy when handled rough...and can't be welded easy. And the reason they're aluminum is so they won't be so apt to knock sparks—and you betcha life that's important!

So-o-o, when you move this machine, do it gentle-like. Empty it first to make it light. Don't put a lotta strain on the rails or the skids and make a habit of coming down real easy with those boondockers, eh?

Jot it down

There's no need turning your inner tubes in for replacement 'cause they need new valve stems.

Now there's a tool waiting for you at the supply depot that'll let you do a repair job.

It's called Holding Tool, valve, tire repair, FSN 5120-223-9346, and it's been made a part of your Organizational Maintenance (2nd Echelon) Tool Kit No. 1 Common.

No extra business

Forgettin' to close the hatch doors on your combat vehicles while parked out in the weather can lead to a mess—'specially leaving 'em open overnight.

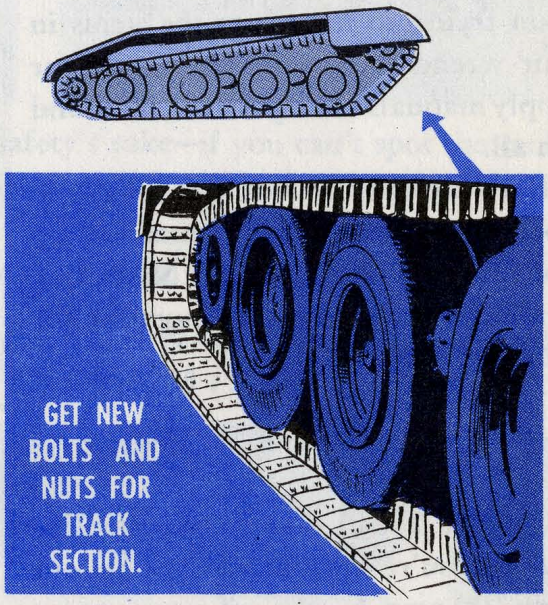
Weather can rot the protective pads while dust and dirt get into working parts. This means more time on repairs and cleaning for you. So close those hatches...'cause you got enough normal business as it is.

Look to your nuts and bolts

If you M56 90-mm gun Scorpion crewmen are having troubles with the track section—especially over rough and rocky ground—could be it's the nuts and bolts.

The bolts, FSN 5306-571-6846, the nuts, OPN 8740990, are failing. This causes the track guides to hit at the wrong angle and you've had it with a broken track section.

If this be your problem . . . something's been done about it. You can now ask for new bolts, FSN 5306-530-9131, and new nuts, FSN 5310-050-3345—they're available.

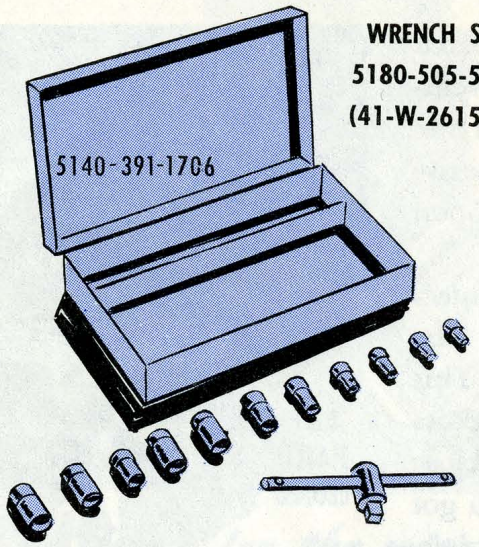


Widening the field

The new battery cover clamp to prevent short-circuiting in your M42, M44, M52 and M41 tracked vehicles is listed under FSN 6140-695-8938. You can get the full dope on replacing 'em in MWO 9-2300-200-20 (1 Dec 58).

Breakdown of wrench sets

5120-189-7906 1/4X
5120-189-7907 5/16X
5120-189-7908 3/8X
5120-236-2262 3/16XX
5120-236-2263 7/32XX
5120-236-2264 1/4XX
5120-242-3345 9/32XX
5120-235-5869 7/16XXX
5120-235-5878 5/16XXX
5120-242-3351 11/32 XXX
5120-242-3352 3/8XXX
X=8 PT
XX=HEX
XXX=12 PT



WRENCH SET
5180-505-5923
(41-W-2615-20)

5120-227-8105

07971-V 27

5120-236-2140

5120-242-3256

5120-243-7325

5120-221-7960

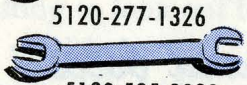
5120-221-7966

5120-277-2341

5120-277-1325

5120-277-1324

5120-277-1326

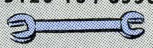

5120-595-9028

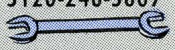
Maybe you've been racking your brain trying to match up the items in your wrench sets with FSN's in your supply manuals—and you haven't found 'em all.

Here are two sets you'll not have to worry about 'cause they're matched up—pictures to FSN's. You Nike-Ajax men might want to make a notation for your TM 9-5010-2-1.

WRENCH SET, OPEN END 5120-395-2014

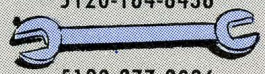
5120-184-8558


5120-240-5609


5120-277-7025

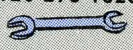
5120-187-7134

5120-184-8438


5120-277-2326

5120-277-2342

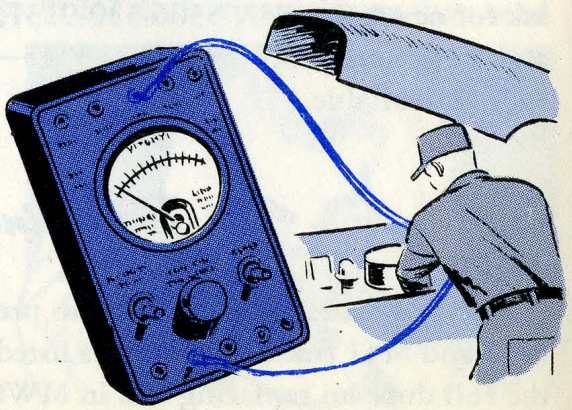
5120-293-1328


5120-187-7126

5140-449-8130

Chapter 2 check

Chapter 2 will make life easier for you—if you're the man checking out those 100-amp AC charging systems on your wheeled vehicles. Chapter 2 spells out the organizational maintenance tests and adjustments for this system. Oops—almost forgot... it's Chapter 2 of TB 9-2300-206-15 (28 Nov 58) that's being talked about.



Brake blues

Before you start adjustin' the brakes in your M48A2 tank, it'd be a smart idea to take a minute or three skimming through TM 9-7022, which gives you the info you need—in three different places.

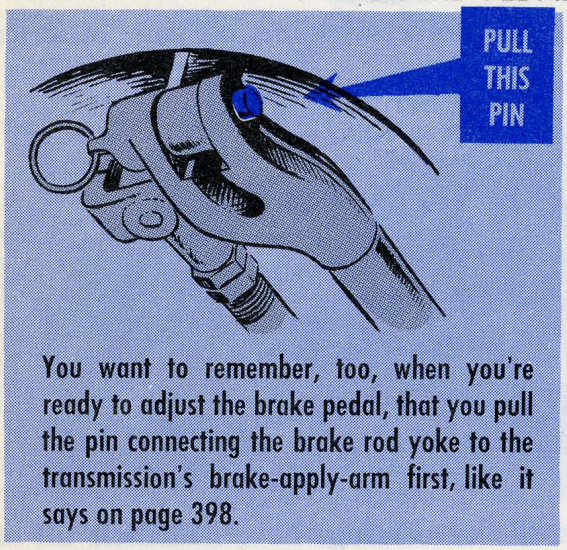
For example:

Page 398 lists the procedure for adjusting the brakes.

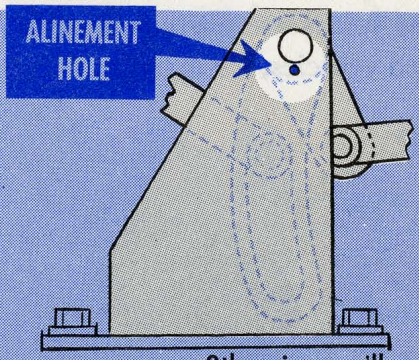
Page 462 shows you a handy schematic of the brake control linkage.

Page 470 and 471 have the info for adjusting the brake pedal.

BRAKE PEDAL ADJUSTMENT



You want to remember, too, when you're ready to adjust the brake pedal, that you pull the pin connecting the brake rod yoke to the transmission's brake-apply-arm first, like it says on page 398.

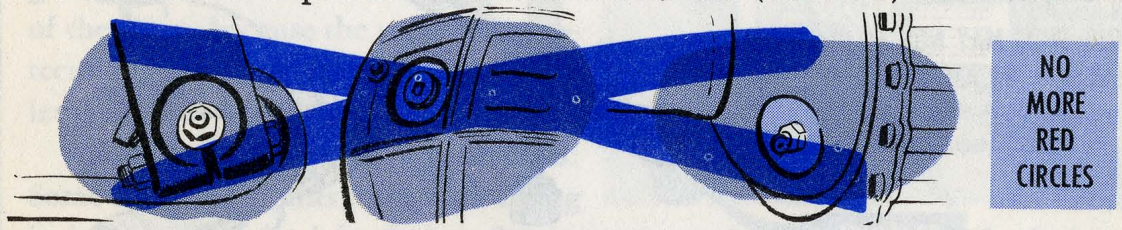


Otherwise, you'll never get the alinement holes in the cam and bracket to line up, like the pix on page 471 shows.

One other tip to keep in mind for safety's sake—if you can't spot the tank on level ground, block the road wheels before doing any brake adjustment.

No more red

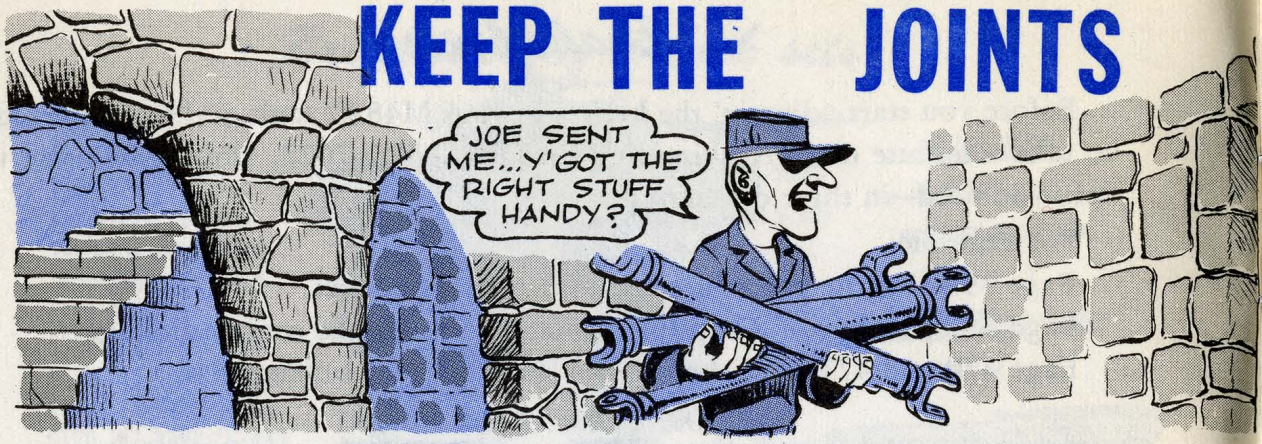
Here's a note for your Ordnance vehicle TM's: No more painting those red circles around the lube points. The word's in TB 9-265 (5 Dec 58). How 'bout that?



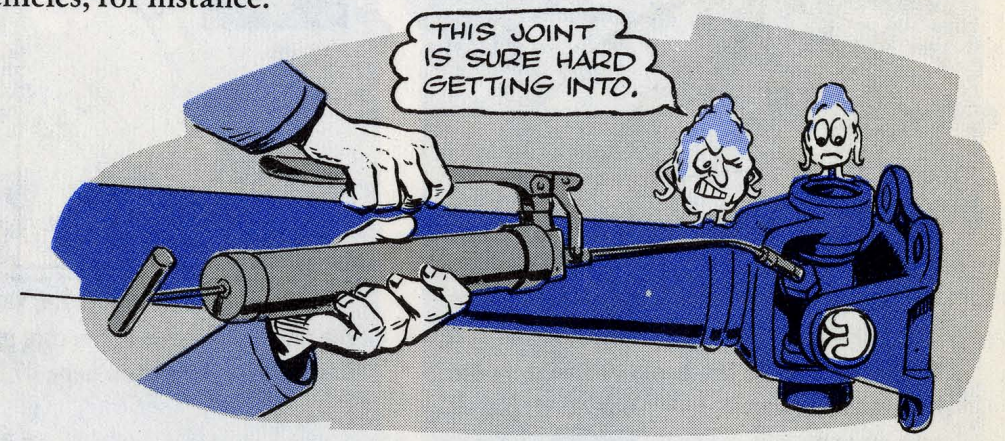
Tell 'em

Got any **rebuilt** general purpose vehicles around? Well, make sure you let Ordnance support know about them when they ask. The info you're supposed to help them with is listed under para 4e of AR 750-2300-4 (18 Dec 57) and Change 1 (4 Nov 58).

KEEP THE JOINTS

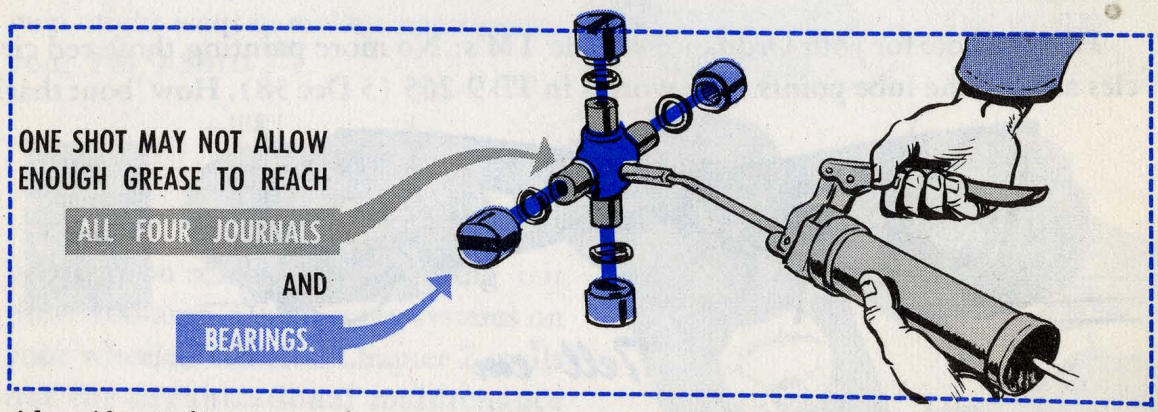


Some joints are hard getting in... like the universal joints on your M-series wheeled vehicles, for instance.



Figuring out when the U-joint journals and bearings have had their fill of grease can be a problem, unless you remember a couple-three things.

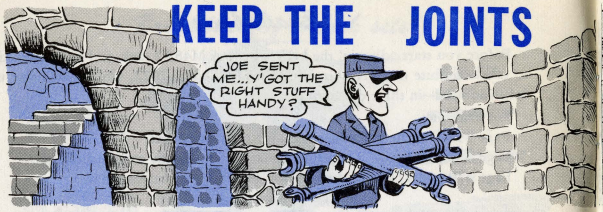
Some guys follow the **one-shot-system** with a **hand** grease gun. They do that to protect the bearing seals from blowing. But one shot may not fill the central chamber enough to allow grease to get to all four journals and bearings. Be-



sides, if you happen to have neoprene seals, you can overlube a little—because they're built to let grease out and then go right back into place. In fact, you can use a little more pressure with neoprene seals, to help force out all the old grease.

Even with neoprene seals, you won't want to put a pressurized lubricator

KEEP THE JOINTS FULL



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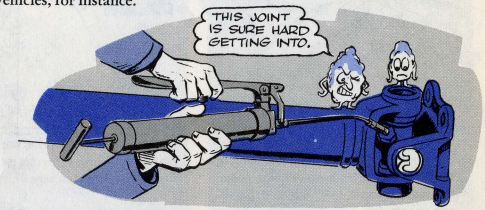

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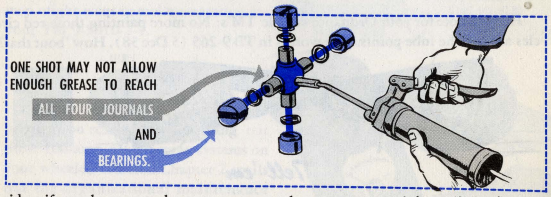

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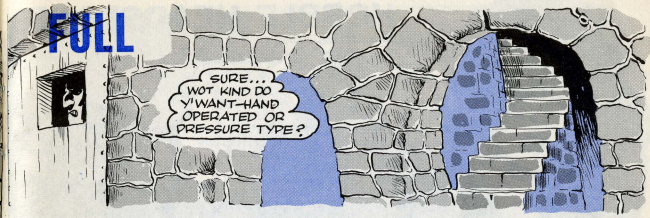
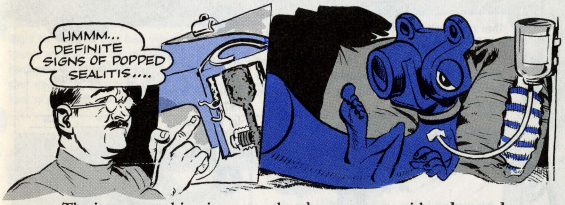
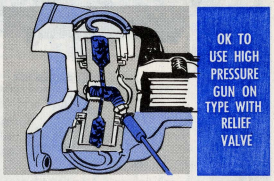


on the U-joint lube-fitting and let 'er fly...'cause a quick burst can still pop a neoprene seal.



The important thing is to use a hand grease gun, with a **slow and easy** pumping action in your trigger hand. That's especially true if you have an old-type joint with dried out cork seals. Keep a close eye for grease starting to ease out of one of the seals . . . then come to a screeching halt. Remember that a blown seal can get you gigged.

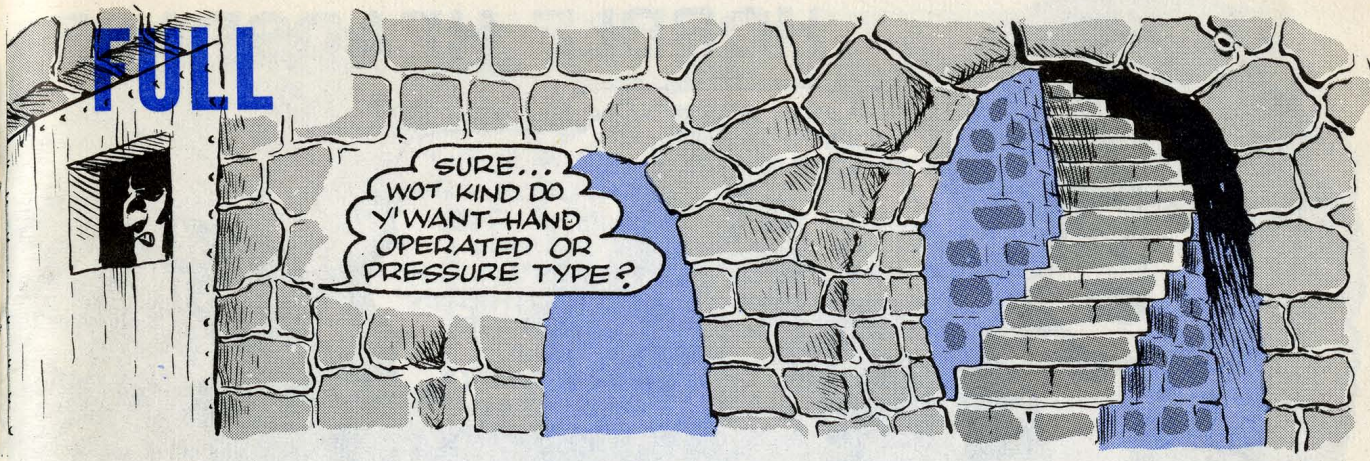


Now there's nothing wrong with using a high pressure gun when you've got a relief valve on the central chamber of the joint—because the valve will protect the seals, besides acting as a gage to let you know when the joint's all filled.

Another thing to stow in your skull: Some of those U-joints come with a plug in 'em instead of a lube fitting. So, you remove the plug and install a fitting for the lube job. Then put the plug back. It stays there to stop any chances of overlubing or seals blowing where there's no other type of relief system.

Of course, the one sure-fire way to keep that joint fully greased is to take it down annually and pack it by hand where the LO says it.

As far as how **often** to use your grease gun, the right way is the LO way.



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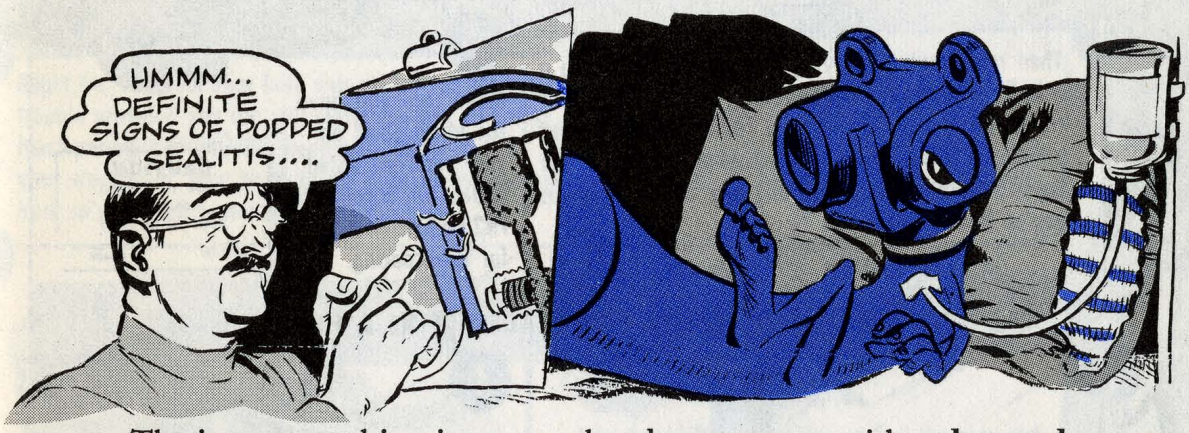

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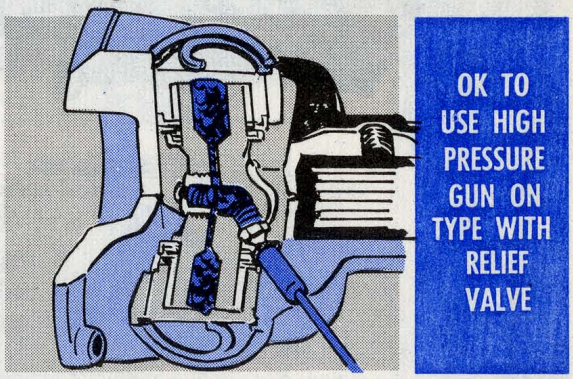

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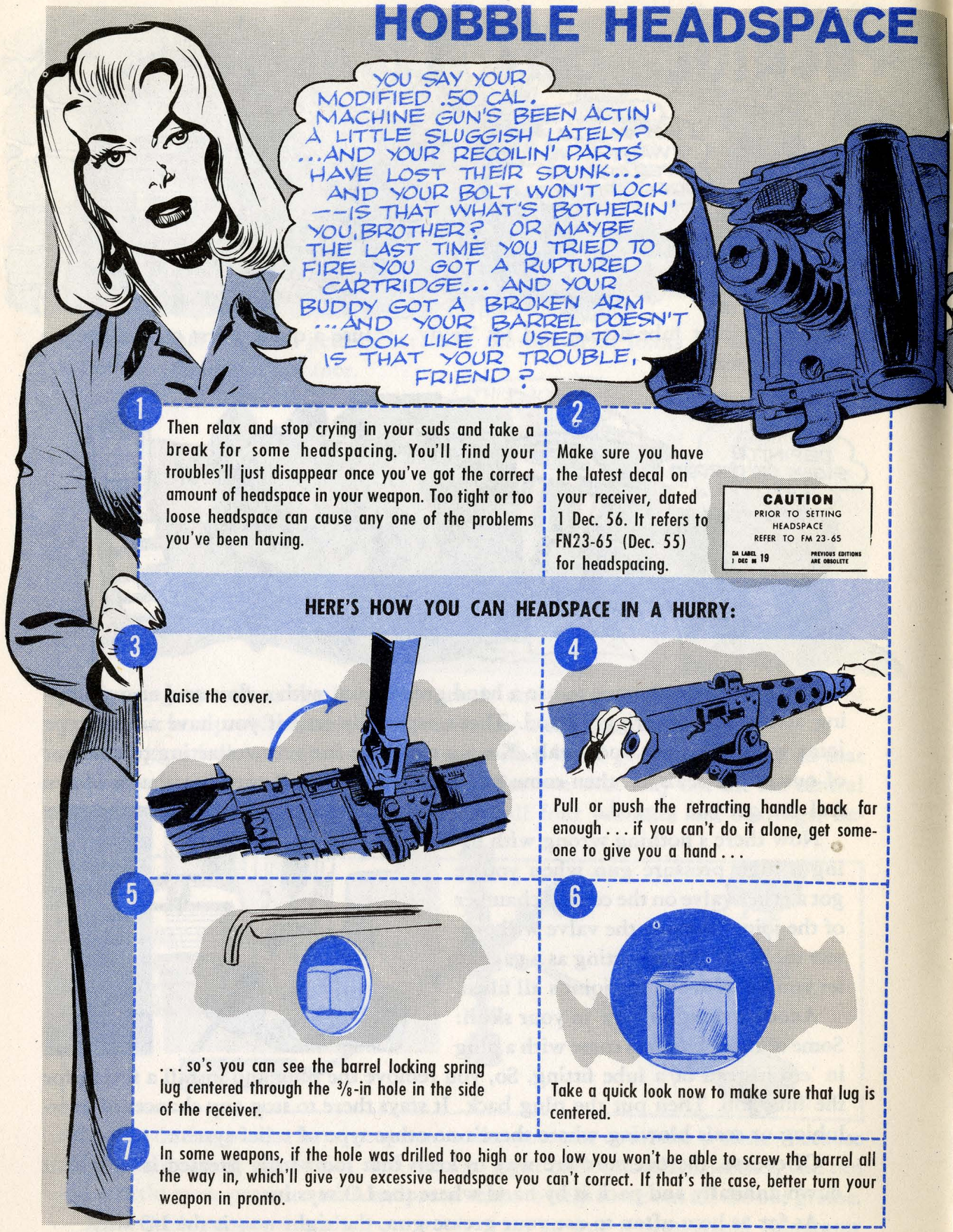
HOBBLE HEADSPACE



1 Then relax and stop crying in your suds and take a break for some headspacing. You'll find your troubles'll just disappear once you've got the correct amount of headspace in your weapon. Too tight or too loose headspace can cause any one of the problems you've been having.

2 Make sure you have the latest decal on your receiver, dated 1 Dec. 56. It refers to FN23-65 (Dec. 55) for headspacing.

HERE'S HOW YOU CAN HEADSPACE IN A HURRY:

3 Raise the cover.

4

Pull or push the retracting handle back far enough . . . if you can't do it alone, get someone to give you a hand . . .

5

. . . so's you can see the barrel locking spring lug centered through the 3/8-in hole in the side of the receiver.

6

Take a quick look now to make sure that lug is centered.

7 In some weapons, if the hole was drilled too high or too low you won't be able to screw the barrel all the way in, which'll give you excessive headspace you can't correct. If that's the case, better turn your weapon in pronto.

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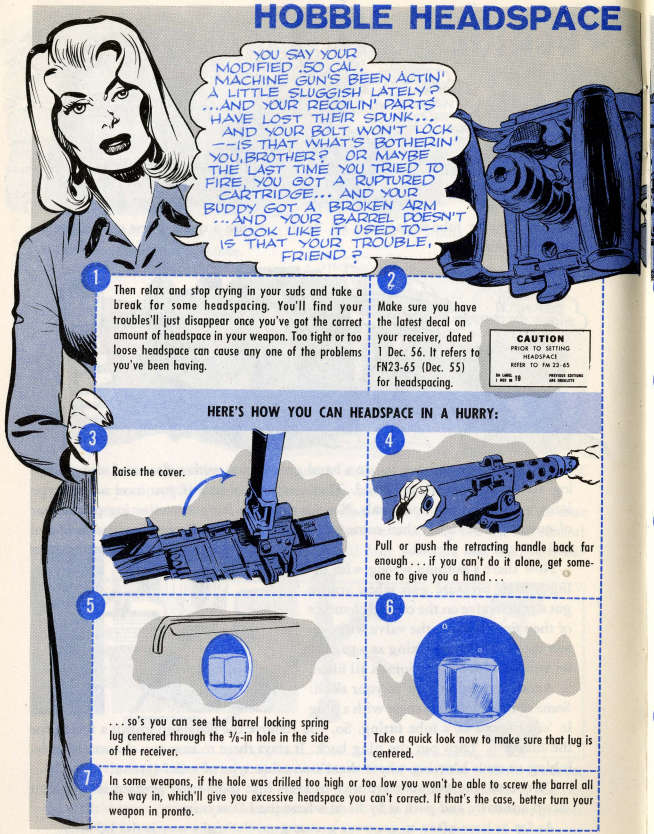

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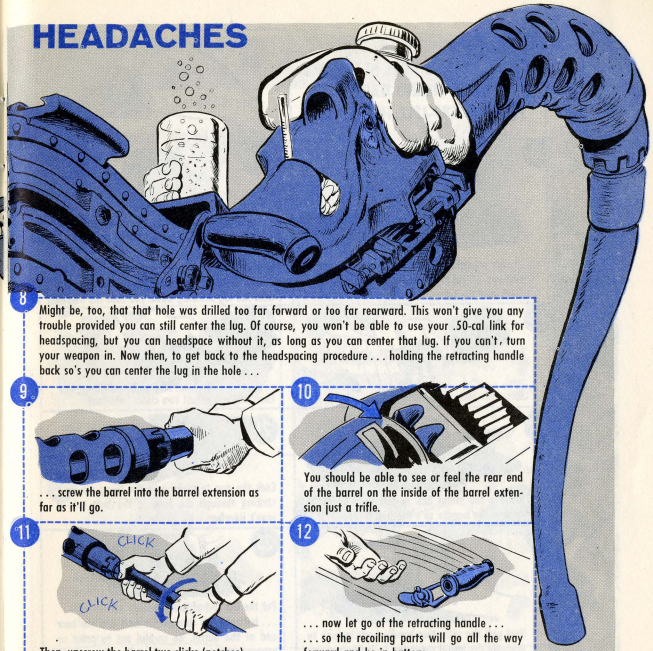
HEADACHES



8 Might be, too, that that hole was drilled too far forward or too far rearward. This won't give you any trouble provided you can still center the lug. Of course, you won't be able to use your .50-cal link for headspacing, but you can headspace without it, as long as you can center that lug. If you can't, turn your weapon in. Now then, to get back to the headspacing procedure . . . holding the retracting handle back so's you can center the lug in the hole . . .

9 . . . screw the barrel into the barrel extension as far as it'll go.

10 You should be able to see or feel the rear end of the barrel on the inside of the barrel extension just a trifle.

11 Then unscrew the barrel two clicks (notches) . . .

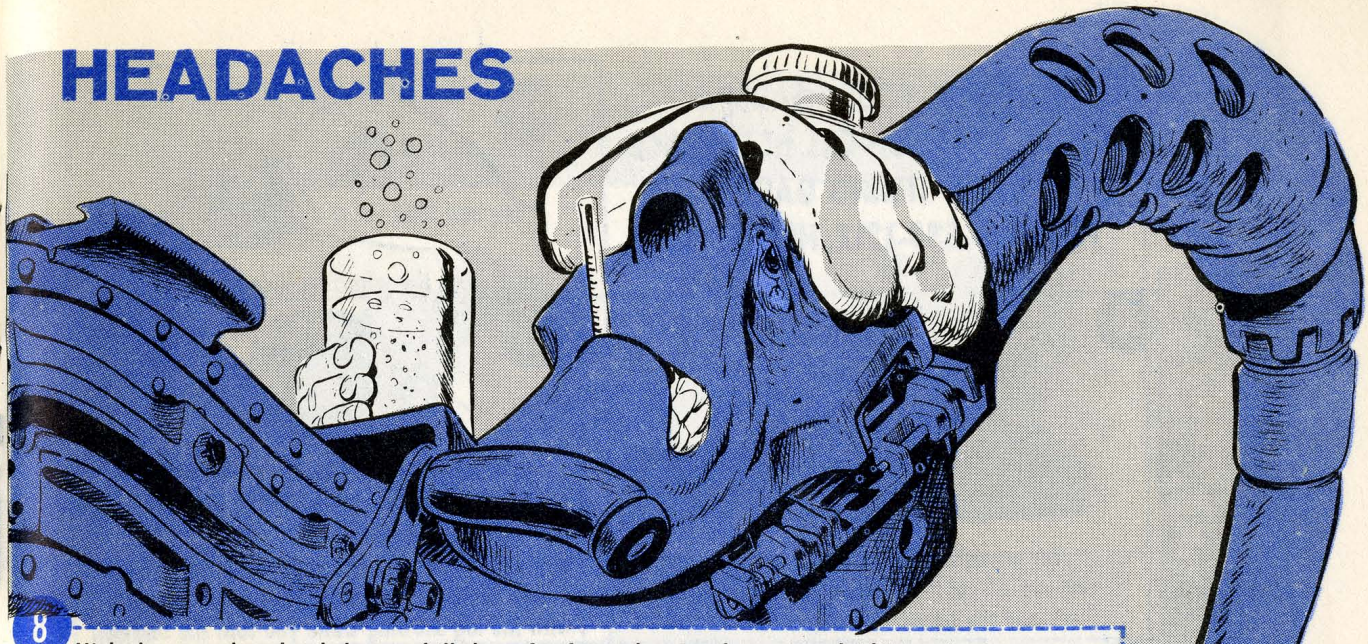
12 . . . now let go of the retracting handle . . .
. . . so the recoiling parts will go all the way forward and be in battery.

NOW, TEST FIRE YOUR WEAPON—IT SHOULD BE OK. IF YOUR GUN STILL ACTS SLUGGISH:

13 Get the barrel locking spring lug back into view through the hole . . .

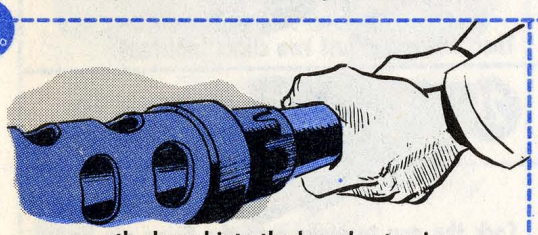
14 . . . and unscrew the barrel one more click (notch) and only one click.

HEADACHES



8 Might be, too, that that hole was drilled too far forward or too far rearward. This won't give you any trouble provided you can still center the lug. Of course, you won't be able to use your .50-cal link for headspacing, but you can headspace without it, as long as you can center that lug. If you can't, turn your weapon in. Now then, to get back to the headspacing procedure . . . holding the retracting handle back so's you can center the lug in the hole . . .

9



. . . screw the barrel into the barrel extension as far as it'll go.

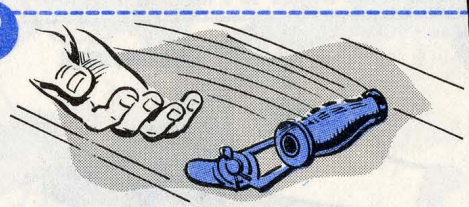
10

You should be able to see or feel the rear end of the barrel on the inside of the barrel extension just a trifle.

11

Then unscrew the barrel two clicks (notches) . . .

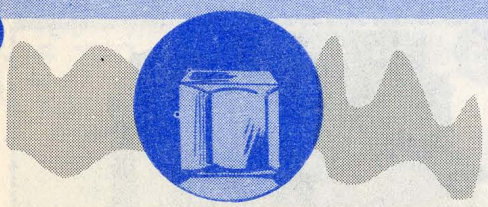
12



. . . now let go of the retracting handle . . .
. . . so the recoiling parts will go all the way forward and be in battery.

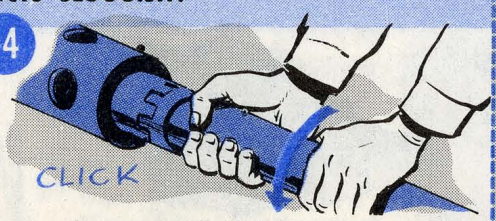
NOW, TEST FIRE YOUR WEAPON—IT SHOULD BE OK.
IF YOUR GUN STILL ACTS SLUGGISH:

13



Get the barrel locking spring lug back into view through the hole . . .

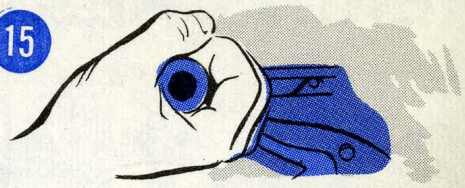
14



. . . and unscrew the barrel one more click (notch) and only one click.

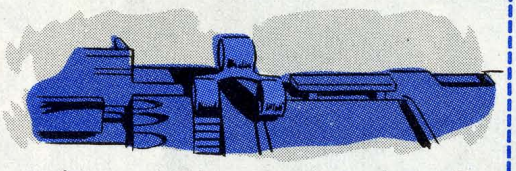
TO CHECK YOUR HEADSPACE USING YOUR .50-CAL HEADSPACE AND TIMING GAGE, FSN 1005-535-1217, HERE'S HOW:

15



Pull or push the retracting slide handle back . . .

16



. . . far enough so's you can insert the smaller ring of a .50-cal metal link between the trunnion block and the barrel extension . . .

17

. . . so's you'll be able to screw the barrel in. (This'll line up the lug with the hole in the receiver.)

If you don't have a link, and need help, get a buddy to hold the retracting handle in place with the lug showing while you turn the barrel.

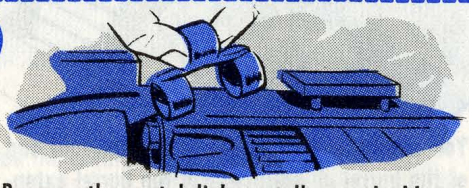
18

Screw the barrel in all the way.

19

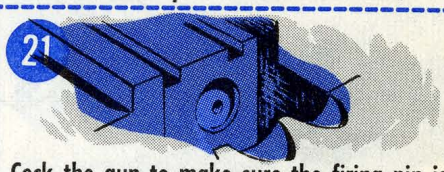
Then unscrew it just two clicks (notches).

20



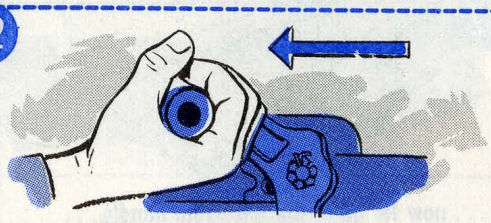
Remove the metal link or tell your buddy to release the handle so's the bolt'll close.

21



Cock the gun to make sure the firing pin isn't sticking through the face of the bolt so's it won't interfere with gaging.

22



Now pull the retracting handle back enough to separate the barrel extension from the trunnion about 1/16 of an inch.

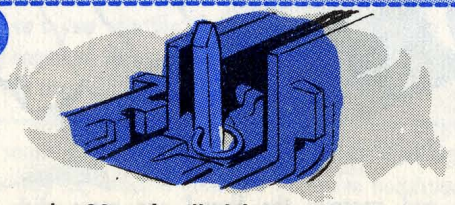
23

Put the GO end of the gage . . .

. . . between the face of the bolt and the rear end of the barrel. Be careful not to press or squeeze the trigger accidentally, since this'd release the firing pin.

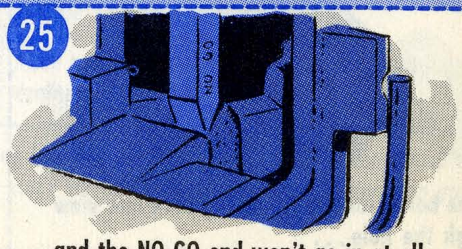
IF YOUR HEADSPACE ADJUSTMENT IS OK:

24



. . . the GO end will slide in easily, up to the dividing ring . . .

25



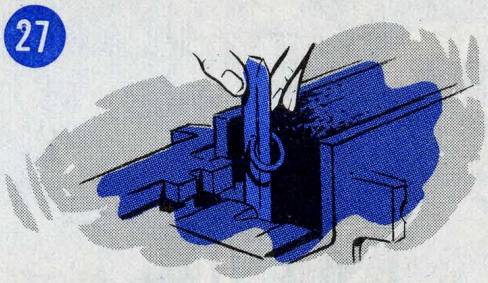
. . . and the NO GO end won't go in at all.

IF THE "GO" END WON'T GO IN EASILY:

26 Your headspace is too tight and you'll have to . . .

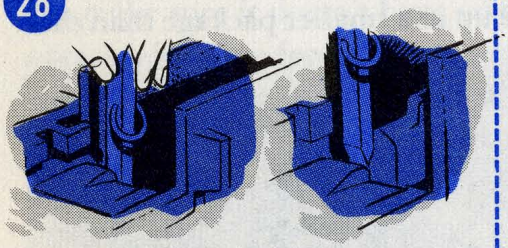
. . . back off the barrel one more click (notch)...

27



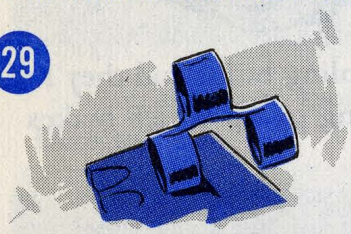
. . . checking with the gage after each click (notch) . . .

28



. . . until the GO enters freely . . .
. . . and the NO GO end doesn't enter at all.

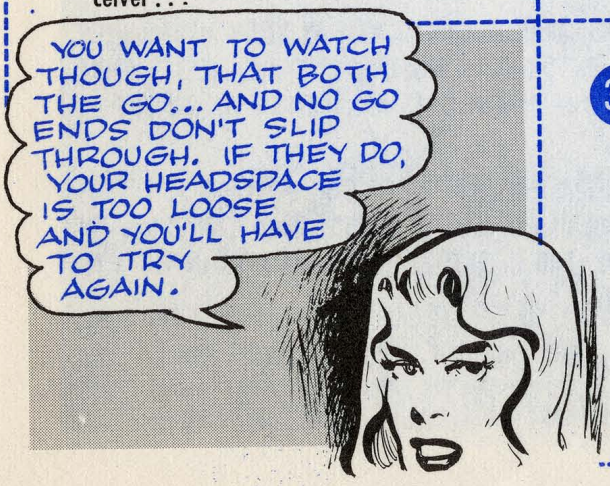
29



Insert the metal link or retract the handle before each click (notch) to line up the locking spring lug with the hole in the side of the receiver . . .

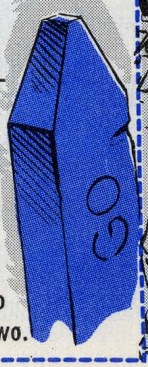
30

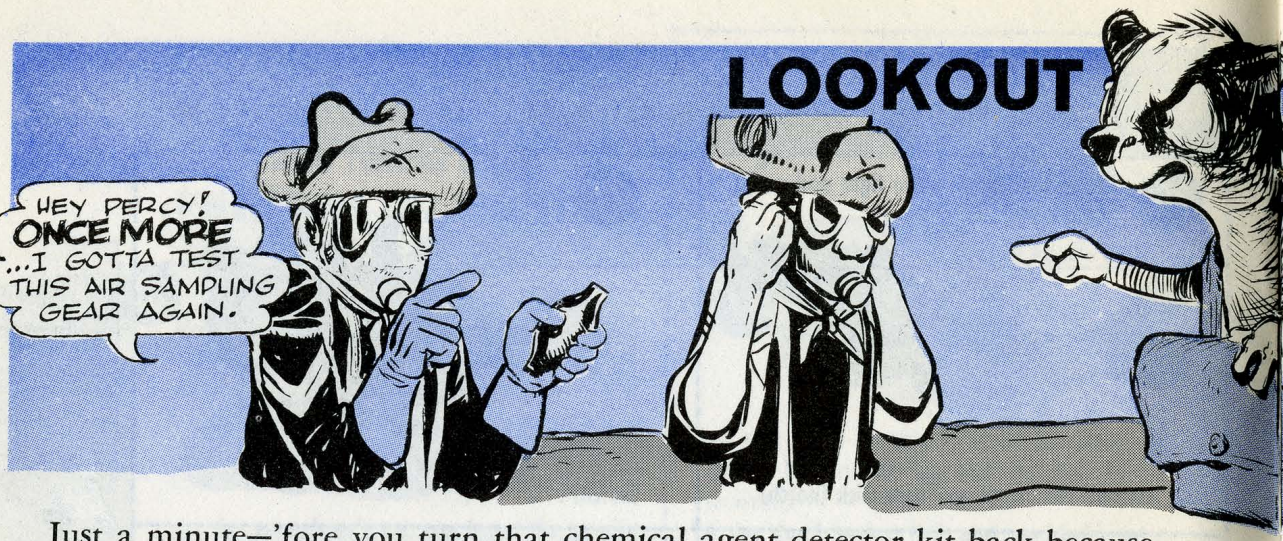
. . . so's you'll be able to turn the barrel.



31

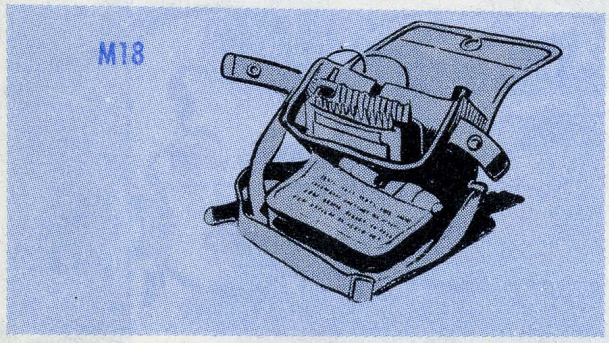
If you have to do any headspacing in the dark, here's a tip—file a tiny notch in the GO end of your gage. That way you'll be able to tell with your fingernail if you've got the right end when you go to insert the gage. The notch won't hurt the gage at all and it'll make it easy for you to tell the difference between the two.

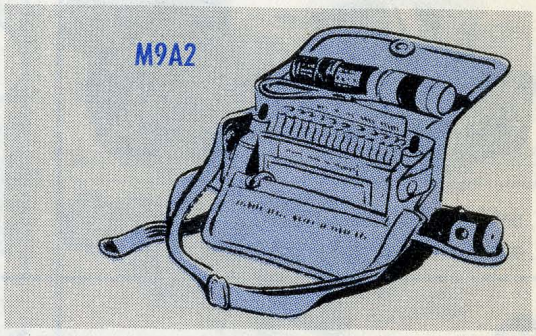




Just a minute—'fore you turn that chemical agent detector kit back because you think you've been "short changed"—better take a second look.

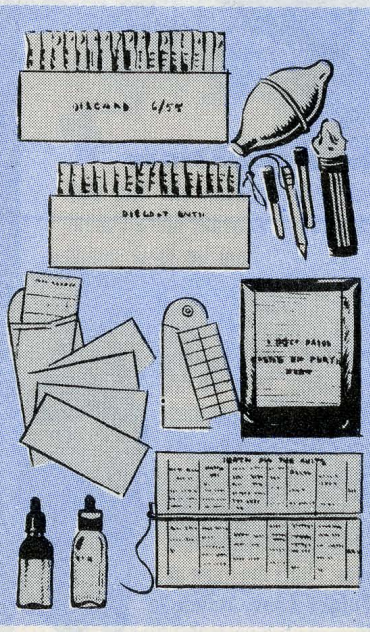
You probably have the M18 kit and it's done up in a smaller package than the





M9A2. And here's why: In the M18 kit you have air sampling bulbs and they're only four inches long, while the M9A2 has an air sampling pump which makes the kit more bulky.

M18



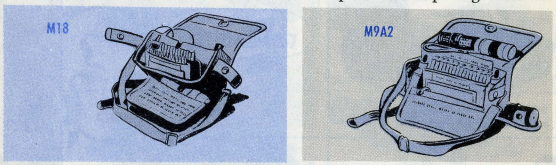
IN YOUR M18 KIT THE G-AGENT TEST SENSITIVITY HAS BEEN INCREASED ABOUT FOUR TIMES.

ONE CHEMICAL AGENT TUBE IN YOUR M18 IS NOW USED FOR BOTH MUSTARD AND "G" TESTS, WHILE TWO DIFFERENT ONES ARE USED IN YOUR M9A2.

THERE'S NO HEATER FOR THE MUSTARD DETECTION TUBE IN THE M18 KIT. YOU'LL FIND TEAR STRIPS ON THE LEAD DETECTOR TUBE CONTAINERS IN THE M18 KIT.

Just a minute—'fore you turn that chemical agent detector kit back because you think you've been "short changed"—better take a second look.

You probably have the M18 kit and it's done up in a smaller package than the



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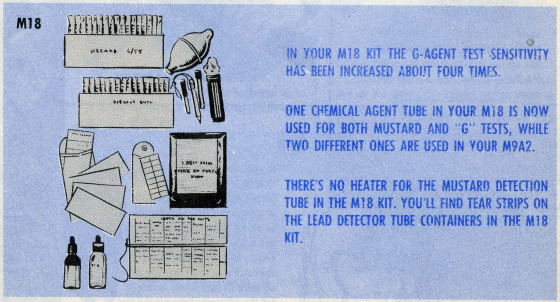
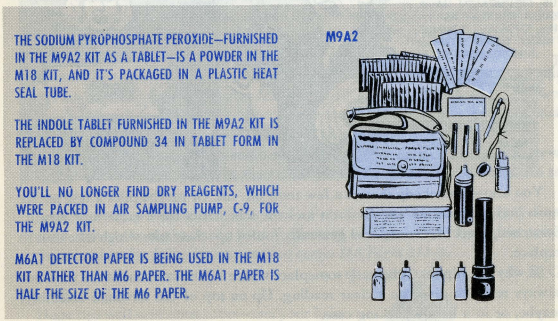
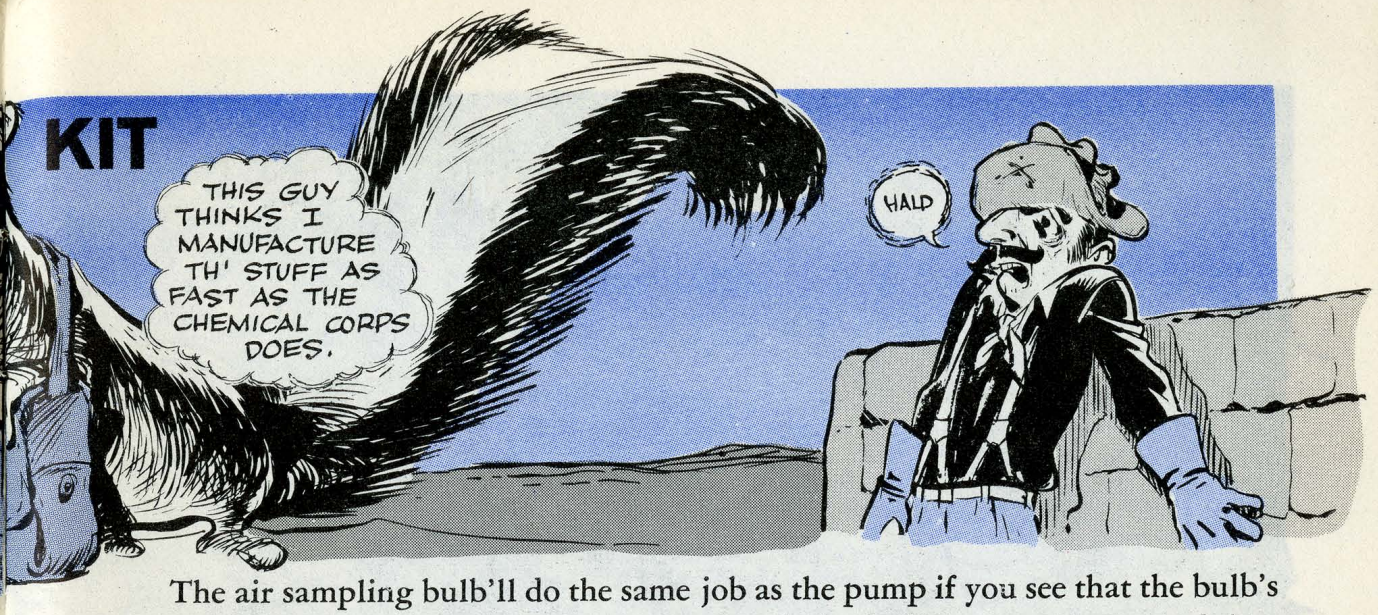


The air sampling bulb'll do the same job as the pump if you see that the bulb's in good shape. That means you have to give the bulb the once over now and then to make sure it doesn't have cracks or leaky valves. When you find one that has cracks, it's time for a new one.

While you're checking, it's a good idea to check that date on your chemicals so you can get the refill kit when you need it.

Here are some more differences you'll find between your M18 and M9A2 Detector Kits.





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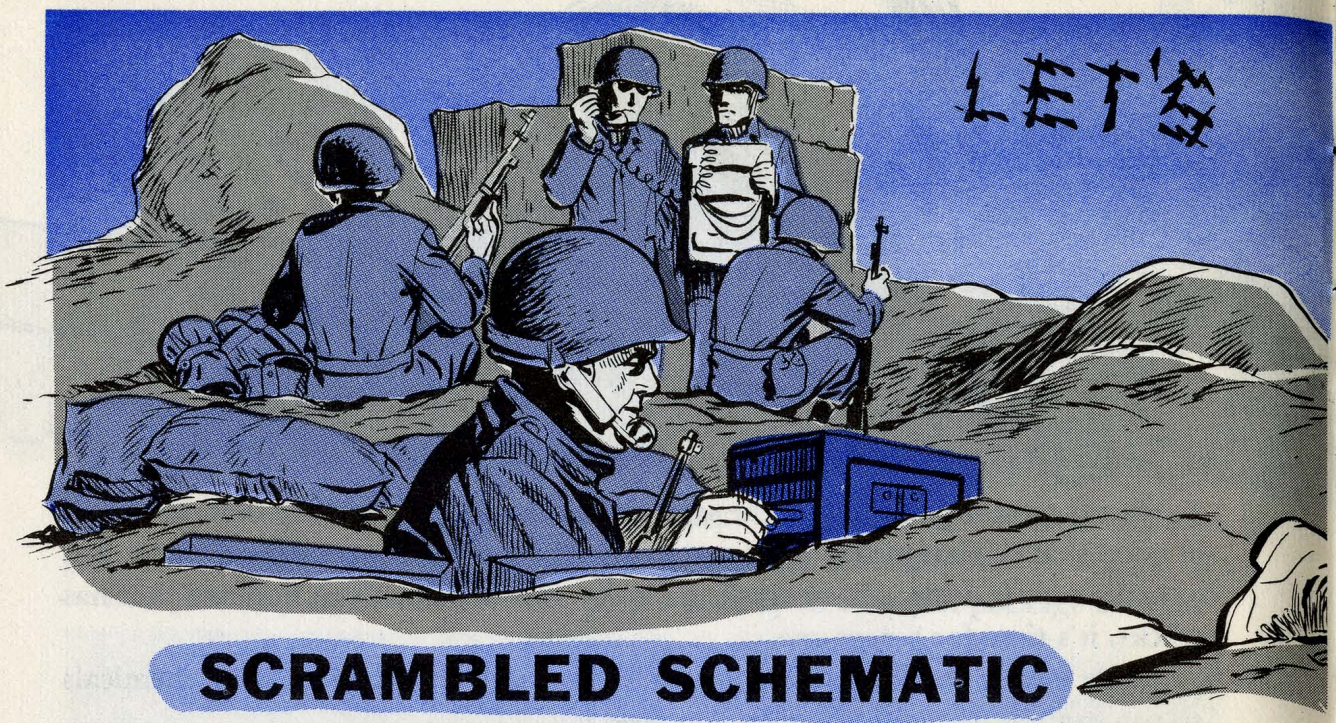
THE SODIUM PYROPHOSPHATE PEROXIDE—FURNISHED IN THE M9A2 KIT AS A TABLET—IS A POWDER IN THE M18 KIT, AND IT'S PACKAGED IN A PLASTIC HEAT SEAL TUBE.

THE INDOLE TABLET FURNISHED IN THE M9A2 KIT IS REPLACED BY COMPOUND 34 IN TABLET FORM IN THE M18 KIT.

YOU'LL NO LONGER FIND DRY REAGENTS, WHICH WERE PACKED IN AIR SAMPLING PUMP, C-9, FOR THE M9A2 KIT.

M6A1 DETECTOR PAPER IS BEING USED IN THE M18 KIT RATHER THAN M6 PAPER. THE M6A1 PAPER IS HALF THE SIZE OF THE M6 PAPER.



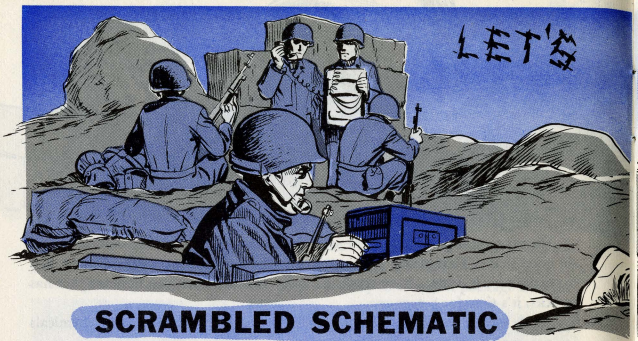
SCRAMBLED SCHEMATIC

Those AN/TCC (Antique) telephone and telegraph terminal sets come your way with a handy plastic-coated schematic. Makes it mighty easy to trace your circuitry when the need arises.

Only thing, though, they get scratched, cracked, stained and generally botched up 'cause sometimes they get used for something beside tracing a circuit.

You know, somebody throws a few tools on 'em. Or maybe piles a few power units and modems on 'em. Or even uses the schematics for a table top! Result: Scratched, cracked, stained and generally fouled up schematics which take time to replace.

So why not slip that schematic someplace where it'll be safe, out of the way, but always ready to give you a clear reading. Up on top of the terminal assembly, maybe, or in a handy packing case.



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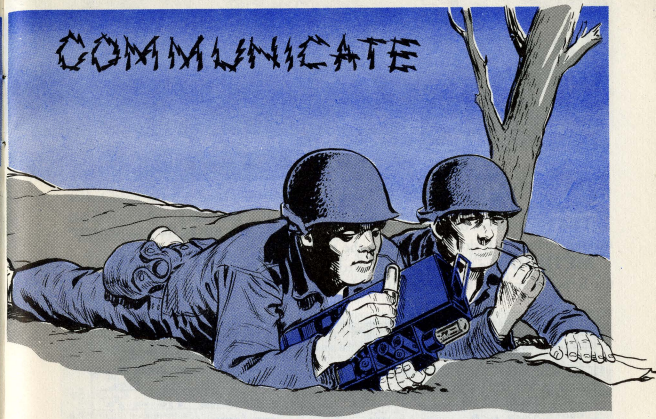

IN A THERMAL TURMOIL

Dear Connie,

Some of us old grouches back at Third Echelon might have a little more hair if you would pass the word to the Second Echelon mechanic to be real careful when replacing the thermal resistor R-32 (FSN 5905-258-0794) in the AM-65/GRC, amplifier power supply. They are usually marked "Amperite 6-4" on the end.

It seems like somebody down there occasionally reaches into the wrong sack and comes up with the thermal resistor (FSN 5905-299-1748). It's marked "Amplex TJ 801K-1" or "Amperite 7H4B" for use in the PP-112/GR power supply, and burns out a string of tubes in the RT-70/GRC receiver-transmitter.

Resistor R-32 is designed to maintain the correct filament voltage at a current drain of .575 to .630 amps, while the ballast for the PP-112/GR operates at .76 to .82 amps.

Consequently, when this ballast is used where the current is low, it doesn't drop enough voltage to maintain the proper filament voltage. That's when the tubes light up real pretty for a minute, and out comes DA Form 811-1.

B. R. C.

Dear B. R. C.,

Hope this will save some tubes—and your hair.

Connie

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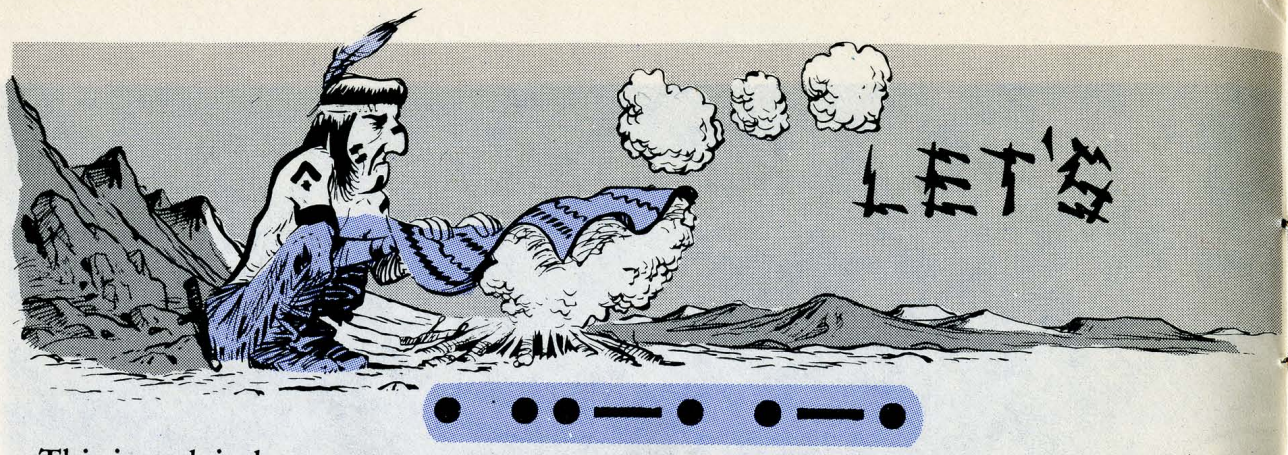


This is a plain language message.

No coding. Top priority.

TEXT: You users of Signal Corps equipment can really spread the maintenance message where it'll do your buddies the most good.

METHOD: Use a small piece of cardboard (DD Form 787-1, Electronic Failure Report) and Uncle Sam's mail. Both free.

REPORT THE FAILURE OF ONLY ONE PART OR TUBE ON THIS FORM — *REPORTS CONTROL SYMBOL CSGLD - 803*

1. REPORT NO.	2. REPORTING ACTIVITY: ACAN FACILITIES CONTROL, TAIPEI		3. REPAIRED OR REPORTED BY (Name): SFC RICHARD B. JONES	4. DATE OF FAILURE: 2 DEC 58
5. EQUIPMENT INSTALLED IN (Type and No.): TELEGRAPH TERMINAL	6. TIME METER READING OR INSTALLATION LOG TIME: NA		7. WAS MISSION ABORTED? ☐ YES ☒ NO	8. OPERATIONAL CONDITION: NOT OPERATIONAL
EQUIPMENT	9. MODEL DESIGNATION AND MOD. NO.: AN/FGC-29	10. SERIAL NO.: 68	11. CONTRACTOR: WESTERN UNION	12. CONTRACT OR ORDER NO.: 374-PH-54
COMPONENT (Major Unit)	13. MODEL DESIGNATION AND MOD. NO.: AN/FGR-3	14. SERIAL NO.: 68	15. CONTRACTOR: WESTERN UNION	16. CONTRACT OR ORDER NO.: 374-PH-64
ASSEMBLY OR SUBASSEMBLY	17. ASSEMBLY AND MOD. NO.: COMBINER	18. SERIAL NO.: NSN	19. MANUFACTURER: WESTERN UNION	20. (Leave Blank)
PART DATA	21. PART NAME OR TUBE TYPE: TRANSFORMER	22. STOCK NO. OF FAILED ITEM: 5805-697-8067	23. PART REF. DESIG. (V-101.R-101, etc.): Z-1	24. REPAIR TIME (Man-Hours)
	25. HOURS IN SERVICE: 900	26. MANUFACTURER OF FAILED PART: BURNELL & CO. INC.	27. SERIAL NO.: NA	28. WAS REPLACEMENT PART AVAILABLE LOCALLY? ☐ YES ☒ NO

DD FORM 787-1 AUG '54

ELECTRONIC FAILURE REPORT

29. FIRST INDICATION OF TROUBLE
- 1 ☐ INOPERATIVE
- 2 ☐ INTERMITTENT
- 3 ☒ LOW PERFORMANCE
- 4 ☐ NOISY
- 5 ☐ OFF FREQUENCY
- 6 ☐ OUT OF ADJUSTMENT
- 7 ☐ OVERHEATING
- 8 ☐ UNSTABLE
- 9 ☐ OTHER

30. CHECK TYPE(S) OF TUBE OR PART FAILURE
- 007 ☐ ARCING
- 710 ☐ BEARING FAILURE
- 780 ☐ BENT
- 040 ☐ BINDING
- 070 ☐ BROKEN
- 720 ☐ BRUSH FAILURE
- 080 ☐ BURNED OUT
- 130 ☐ CHANGED VALUE
- 170 ☐ CORRODED
- 001 ☐ GASSY
- 300 ☐ GROUNDED
- 380 ☐ LEAKAGE
- 730 ☐ LOOSE
- 004 ☐ LOW GM OR EMISSION
- 750 ☐ MISSING
- 008 ☐ NOISY
- 450 ☐ OPEN
- 099 ☐ OTHER
- 790 ☐ OUT OF ADJUSTMENT
- 006 ☒ SHORTED
- 770 ☐ SLIP RING OR COMMUTATOR FAILURE
- 018 ☐ TESTED OK DID NOT WORK
- 020 ☐ WORN EXCESSIVELY
- ☐ SEE AR 700-39 FOR ADDITIONAL CODES (For Army Use Only)

31. CAUSE OF FAILURE
- 2 ☐ FAULTY PACKAGING
- 5 ☐ MISHANDLING
- 6 ☐ INSPECTION OR TEST
- 1 ☒ NORMAL OPERATION
- 3 ☐ STORAGE
- 7 ☐ ASSOCIATED FAILURE-EXPLAIN
- 4 ☐ OTHER

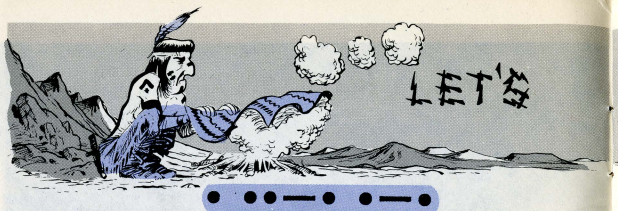
32. WAS THE PART REPLACED DURING PREVENTIVE MAINTENANCE? ☒ YES ☐ NO

ADDRESS: Commanding Officer, U.S. Army Signal Equipment Support Agency, Fort Monmouth, N. J.

AUTHENTICATION: AR 700-39 (23 Jan 59). That's where the word is flashed on uniform procedure for reporting the failure of any Army electronic items. For you Signalers, it's the "short form" that you want to use—DD 787-1—the EFR (• ••—• •—•).

NEED: All the bugs in that Signal gear can be swatted with little sweat. But, only when they're **found.** And it's you guyswho use those radios, phones, switchboards, power supplies, and radars daily, weekly, monthly and all the time, who know just what's going wrong.

RESULT: Signal people will come up with an improvement or replacement to rub out the problem once and for all.



This is a plain language message.

No coding. Top priority.

TEXT: You users of Signal Corps equipment can really spread the maintenance message where it'll do your buddies the most good.

METHOD: Use a small piece of cardboard (DD Form 787-1, Electronic Failure Report) and Uncle Sam's mail. Both free.

REPORT THE FAILURE OF ONLY ONE PART OR TUBE ON THIS FORM — REPORTS CONTROL SYMBOL CSGLD - 803

DD FORM 787-1 — ELECTRONIC FAILURE REPORT

1. REPORT NO.	2. REPORTING ACTIVITY: ACAN FACILITIES CONTROL, TAIPEI		3. REPAIRED OR REPORTED BY (Name): SFC RICHARD B. JONES	4. DATE OF FAILURE: 4 DEC. 58
5. EQUIPMENT INSTALLED IN (Type and No.): TELEGRAPH TERMINAL		6. TIME METER READING OR INSTALLATION LOG TIME: N/A	7. WAS MISSION ADVERSELY AFFECTED? YES ☒ NO	8. OPERATIONAL CONDITION: NOT OPERATIONAL
EQUIPMENT	9. MODEL DESIGNATION AND MOD. NO.: AN/FGC-29	10. SERIAL NO.: 68	11. CONTRACTOR: WESTERN UNION	12. CONTRACT OR ORDER NO.: 374-PH-54
COMPONENT (Major Unit)	13. MODEL DESIGNATION AND MOD. NO.: AN/FGR-3	14. SERIAL NO.: 68	15. CONTRACTOR: WESTERN UNION	16. CONTRACT OR ORDER NO.: 374-PH-54
ASSEMBLY OR SUBASSEMBLY	17. ASSEMBLY NO. AND MOD. NO.: COMBINER	18. SERIAL NO.: NSN	19. MANUFACTURER: WESTERN UNION	20. (Leave Blank)
PART DATA	21. PART NAME OR TUBE TYPE: TRANSFORMER	22. STOCK NO. OF FAILED ITEM: 5935-697-3047	23. PART REF. DESIG. (FY-202.R-203, etc.): T-1	24. REPAIR TIME (Man-Hours):
	25. HOURS IN SERVICE: 900	26. MANUFACTURER OF FAILED PART: BURNELL & CO. INC.	27. SERIAL NO.: N/A	28. WAS REPLACEMENT PART AVAILABLE LOCALLY? YES ☒ NO

29. FIRST INDICATION OF TROUBLE		30. CAUSE OF FAILURE (TUBE OR PART FAILURE)			31. CAUSE OF FAILURE	
1	INOPERATIVE	001	ARCING	002	CASSY	1 FAULTY PACKAGING
2	INTERMITTENT	720	BEARING FAILURE	300	GROUNDED	4 MISHANDLING
3 ☒	LOW PERFORMANCE	780	BENT	310	LEAKAGE	5 INSPECTION OR TEST
4	NOISY	040	BINDING	730	LOOSE	6 NORMAL OPERATION
5	OFF FREQUENCY	070	BROKEN	094	LOW GM OR EMISSION	7 STORAGE
6	OUT OF ADJUSTMENT	720	BRUSH FAILURE	790	MISSING	8 ASSOCIATED FAILURE-EXPLAIN
7	OVERHEATING	080	BURNED OUT	008	NOISY	9 OTHER
8	UNSTABLE	330	CHANGED VALUE	450	OPEN	32. WAS THE PART REPLACED DURING PREVENTIVE MAINTENANCE? ☒ YES NO
9	OTHER	230	CORRODED	099	OTHER	

790	☐ OUT OF ADJUSTMENT	1	☐ FAULTY PACKAGING		
508	☒ SHORTED	4	☐ MISHANDLING		
770	☐ SLIP RING OR COMMUTATOR FAILURE	5	☐ INSPECTION OR TEST		
		6	☒ NORMAL OPERATION		
028	☐ TESTED ON BTE NOT WORK	7	☐ STORAGE		
020	☐ WORK EXCESSIVELY	8	☐ ASSOCIATED FAILURE-EXPLAIN		
	SEE MIL 700-39 FOR ADDITIONAL CODES (For Army Use Only)	9	☐ OTHER		

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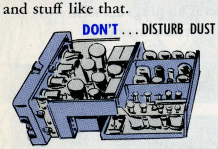
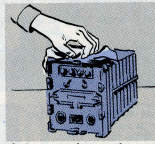
Y'might check this h'yar EFR to sort of see how one guy filled his out. It's just about typical—and should help out next time you're ready to put your equipment trouble in writing.

OFF IN A CLOUD OF DUST

Sometimes it's better to let dust—like sleeping dogs—lie undisturbed. Specially when it's perched quietly on the innards of your radio, telephone terminal, radar and stuff like that.





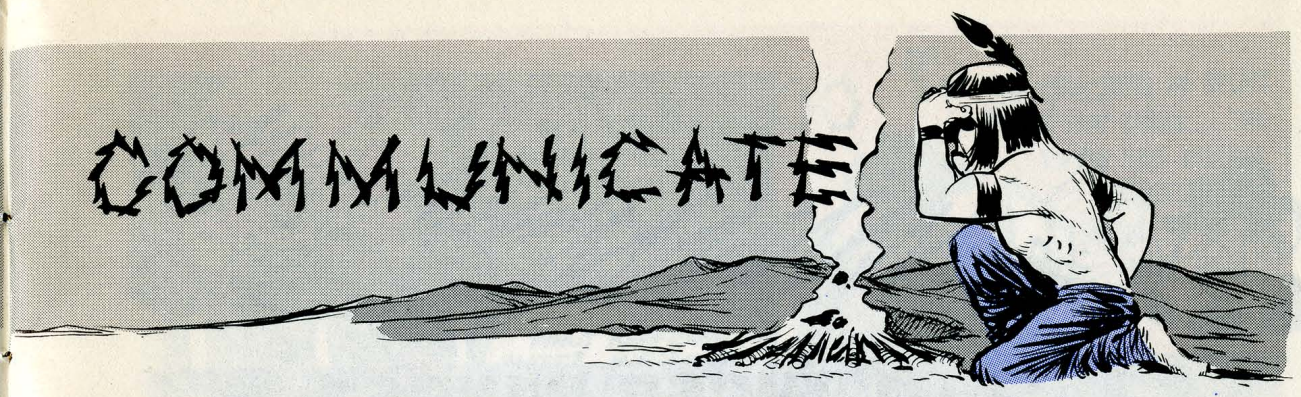
You wouldn't want to pull a successful operation only to find that the patient died from complications. And that's what can happen if your cleaning operation chases the dust onto some sensitive parts like contact points, wafers, relays, etc.

It's just another one of those deals where the less often you probe around on the inside the longer it'll work for you.

So unless the dust is really giving your tubes and such a hard time, it's better to pass it up until the weekly maintenance check. Then you can settle back and wait for expert help from your unit mechanic.

This just goes for the insides, mind you. It doesn't mean you don't shape up the outside of your equipment with gentle, loving strokes with a dust cloth or brush. Things like the cabinets, cases and all that. This kind of care helps keep that dust from getting inside and also works toward keeping the equipment cooler.

You'll probably find that putting a little furniture polish on your cloth will do a lot to keep the dust from flyin' around when you're cleaning.



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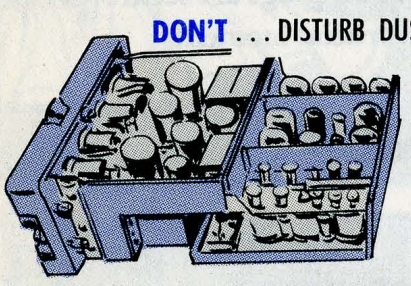

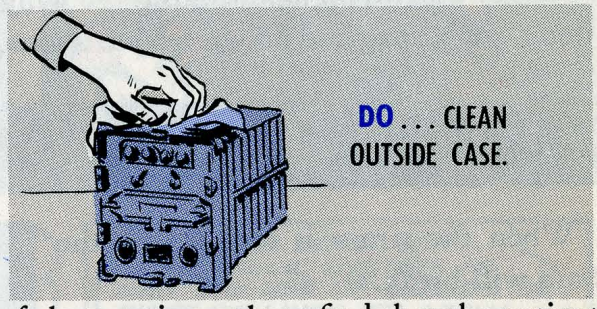

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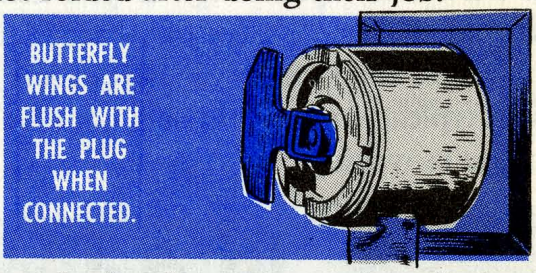
FOLD THOSE WINGS

Watch out when those butterfly wings flap.

They can raise a bad wind if they're not folded after doing their job.

Those wings, of course, are part of just about every power plug and cannon connector used on Signal equipment. And they should flap only when the plug is being connected or disconnected.



They're used to snug up the connection and make it secure by turning the screw in the plug as it goes into the female receptacle. But once that screwing is finished, they should be folded flush with the plug. Which is why the butterfly wings are hinged.

Every shrewd Signaler folds those wings as soon as his plugs are secure—so they don't catch, snag and maybe lead to a loose plug at a crucial moment.

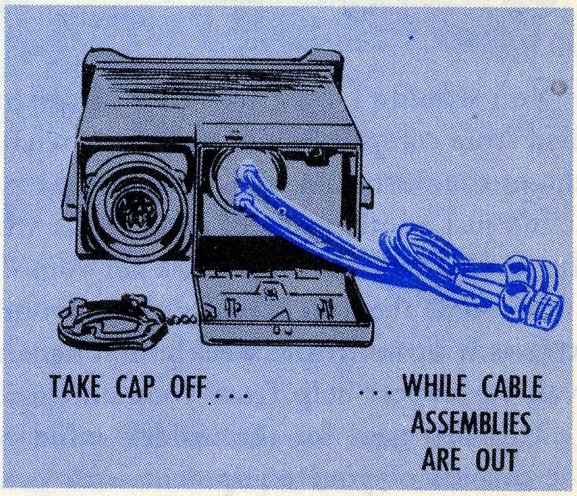
When Your Local Control is . . .

SHORT CHAINED

When the strain is too great — the chain will break.

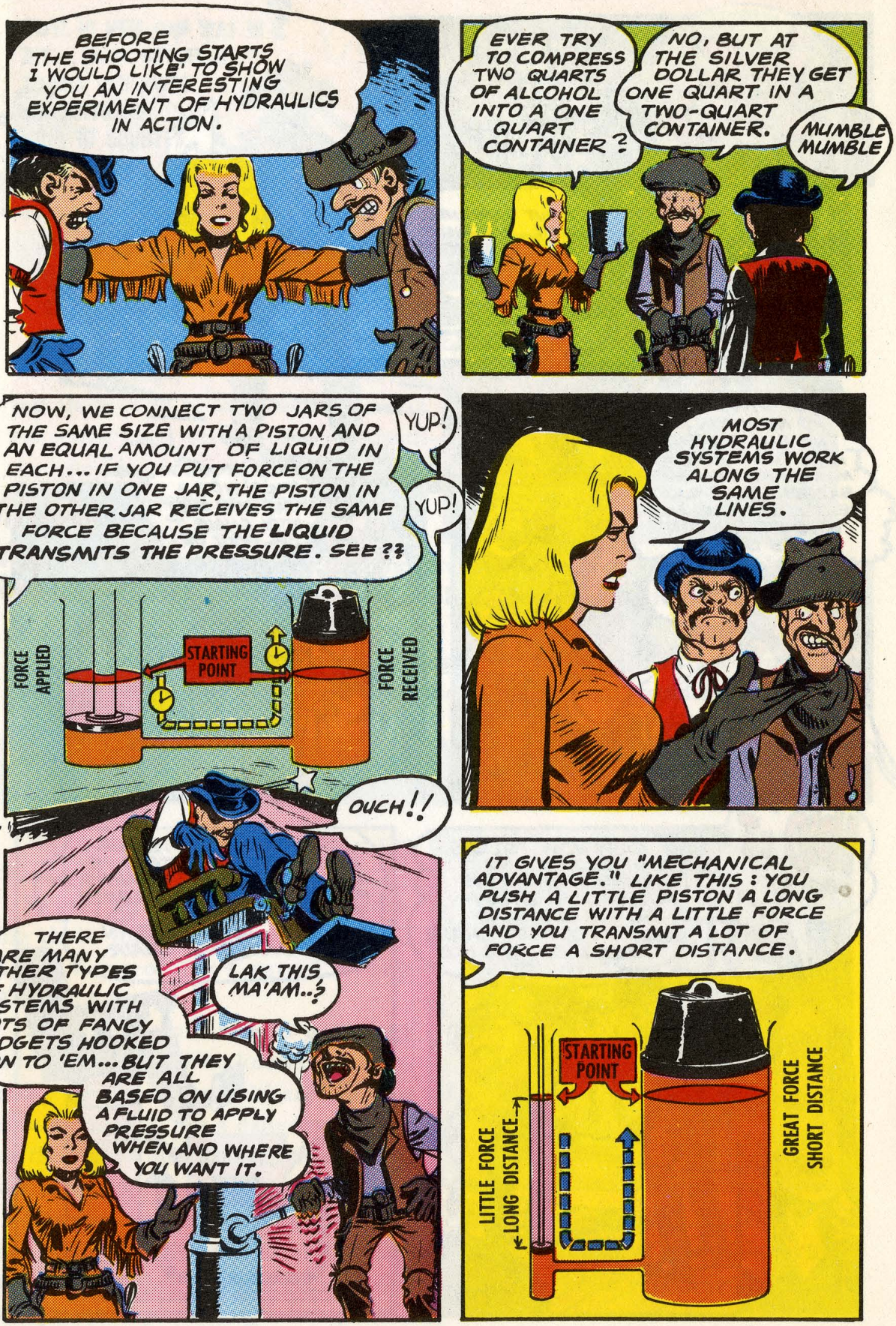
So goes the word on that cap retaining chain you use on the C-434/GRC Local Control (in Control Group AN/GRA-6).

Maybe the chain makers got stingy with their links. Who knows. Anyway, many chains in the field are shy just enough links to put a dangerous strain on the chain when the rear compartment door is open.



Since that door has to be opened whenever the cable assemblies are broken out, one way to ease things is to take the cap off. It'll flop around, of course, but as long as you remember to put it back on the J2 connector when you close up the rear compartment you're in good shape.

JOE'S DOPE
YOUR HYDRAULIC SYSTEM
THE LAW HAD BEEN IN SPLITT CREEK FOR YEARS... THE TOWN HAD ALMOST FORGOTTEN THE SOUND OF GUNS UNTIL NOW!!
WHUT HAPPENED, MATT?... WE AIN'T SEEN LEATHER SLAPPIN' F'R A YEAR!
..IT STARTED THIS MOW-NIN! GREGG THE GUNSLINGER LOPED INTO TOWN TO GET HIS MUSTACHE TRIMMED. BARBER JOE CALLED 'NEXT'... AN' THE MAN WHO STEPPED UP WAS GREGG.
NEXT!
(GULP) WOT A TIME FOR THET FOOL CHAIR T' FOUL UP!
HAR HAR HAR
SPLAT!
HOLD IT BOYS!
EASY NOW, FELLAS. LET'S TRY AND UNDERSTAND THIS HYDRAULIC STUFF SO WE CAN FIND OUT WHY THAT CHAIR BROKE DOWN LIKE IT DID.
SIMMER DOWN, BOYS. A HYDRAULIC SYSTEM IS JUST THE USE OF LIQUIDS IN PIPES OR LINES TO APPLY PRESSURE WHERE YOU NEED IT... JUST LIKE IN THAT BARBER'S CHAIR.
STARTING POINT


BEFORE THE SHOOTING STARTS I WOULD LIKE TO SHOW YOU AN INTERESTING EXPERIMENT OF HYDRAULICS IN ACTION.
EVER TRY TO COMPRESS TWO QUARTS OF ALCOHOL INTO A ONE QUART CONTAINER?
NO, BUT AT THE SILVER DOLLAR THEY GET ONE QUART IN A TWO-QUART CONTAINER.
MUMBLE MUMBLE
NOW, WE CONNECT TWO JARS OF THE SAME SIZE WITH A PISTON AND AN EQUAL AMOUNT OF LIQUID IN EACH... IF YOU PUT FORCE ON THE PISTON IN ONE JAR, THE PISTON IN THE OTHER JAR RECEIVES THE SAME FORCE BECAUSE THE LIQUID TRANSMITS THE PRESSURE. SEE??
YUP!
YUP!
FORCE APPLIED
STARTING POINT
FORCE RECEIVED
OUCH!!
MOST HYDRAULIC SYSTEMS WORK ALONG THE SAME LINES.
THERE ARE MANY OTHER TYPES OF HYDRAULIC SYSTEMS WITH LOTS OF FANCY GADGETS HOOKED ON TO 'EM... BUT THEY ARE ALL BASED ON USING A FLUID TO APPLY PRESSURE WHEN AND WHERE YOU WANT IT.
LAK THIS MA'AM..?
IT GIVES YOU "MECHANICAL ADVANTAGE." LIKE THIS: YOU PUSH A LITTLE PISTON A LONG DISTANCE WITH A LITTLE FORCE AND YOU TRANSMIT A LOT OF FORCE A SHORT DISTANCE.
STARTING POINT
LITTLE FORCE
LONG DISTANCE
GREAT FORCE
SHORT DISTANCE

YOU'LL FIND THAT HYDROSPRINGS AND HYDROPNEUMATIC RECOIL MECHANISMS ARE PART OF THE HYDRAULIC SYSTEM FAMILY. THEY GIVE YOU JUST THE RIGHT BACKWARD AND FORWARD MOTION YOU NEED. THEY CUSHION AND CONTROL THOSE MOTIONS.
NOT LAK THIS.. HUH MA'AM?
WHOA THERE!
NOW IF YOU'RE WITH ME I CAN FILL YOU IN WITH SOME GENERAL INFO THAT'S GOOD FOR ANY HYDRAULIC SYSTEM.
FIRST OFF.. YOU SHOULD USE THE HYDRAULIC FLUID OR OIL THAT'S RIGHT FOR YOUR SYSTEM... BACK AT THE FORT, THE ARMY USES A PUBLICATION CALLED AN LO TO TELL THEM HOW MUCH TO USE AND HOW OFTEN TO REFILL. HAVING THE WRONG FLUID IN YOUR SYSTEM CAN REALLY RUIN THINGS.
IS THERE ANYTHING IN THEYAH 'BOUT LEAD POISONIN', MA'AM?
PETROLEUM TYPE FLUIDS EAT THROUGH RUBBER LINES AND SEALS
NEVER USE PETROLEUM-TYPE FLUID AROUND HYDRAULIC BRAKES OR OTHER SYSTEMS THAT USE RUBBER LINES OR CYLINDERS. A PETROLEUM BASE REALLY RUINS RUBBER... USE THE NON-MINERAL TYPE FLUID. WHEN IT COMES TO MIXING DIFFERENT TYPES OF WEIGHTS OR FLUIDS.. YOU HAVE TO WATCH OUT.. SOME ARE GOOD MIXERS AND SOME AREN'T... CHECK YOUR PUBS ON MIXING WEIGHTS OR TYPES OF FLUIDS. O.K., LET'S GO OUTSIDE AND LOOK AT THE CHART I'VE HUNG ON THE WALL.

JOE'S Dope Sheet

HYDRAULIC AND

Nomenclature	General Use	Specification
Lubricating oil, Hydraulic. (Mineral)	2075-H—SAE 10W	MIL-L-15017
	2110-H—SAE 10 or 20W	MIL-L-15017
	2135-H—SAE 20 For use in hydraulic systems where a general purpose oil with anti-corrosion properties is needed.	MIL-L-15017
Hydraulic fluid, Non-Petroleum. (Non-Mineral)	For hydraulic brake systems.	
Hydraulic fluid, Petroleum Base. (Mineral)	For use in hydraulic mechanisms, as prescribed.	MIL-H-13919
Hydraulic fluid, Petroleum Base. (Mineral)	For use in Delco shock absorbers, and in hydrospring and hydropneumatic recoil mechanisms at all temperatures.	MIL-O-5606
Hydraulic fluid, Non-Petroleum, Automotive (Arctic Type). (Non-Mineral)	A light fluid for use in brake systems under sub-zero conditions.	MIL-H-13910
Hydraulic fluid, Petroleum Base, (Recoil Special). (Mineral)	For use in hydrospring and hydropneumatic artillery recoil mechanisms.	MIL-H-13866
Hydraulic fluid, Petroleum Base, (Preservative, hydraulic equipment). (Mineral)	With additives, for use as a preservative oil in all aircraft hydraulic systems, automatic pilots, and shock struts; as testing and flushing oil for hydraulic components.	MIL-O-6083B
Hydraulic fluid, Non-Petroleum Base, Automotive (Non-Mineral)	For use in Houdaille shock absorbers.	JAN-F-461

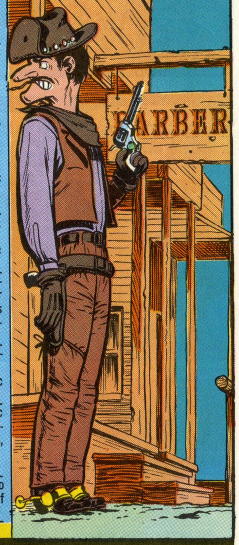
WE HAVE THE WORLD'S BEST EQ

JOE'S Dope Sheet

HYDRAULIC AND RECOIL FLUIDS

Nomenclature	General Use	Specification	Symbol	Container Size	FSN*	Remarks
Lubricating oil, Hydraulic. (Mineral)	2075-H—SAE 10W	MIL-L-15017	2075-H	5 gal drum 55 gal drum (16 gage) 55 gal drum (18 gage)	9150-240-2254 9150-257-5439 9150-240-2255	
	2110-H—SAE 10 or 20W	MIL-L-15017	2110-H	5 gal drum 55 gal drum (16 gage) 55 gal drum (18 gage)	9150-240-2256 9150-261-8286 9150-240-2257	Don't use in non-mineral hydraulic systems.
	2135-H—SAE 20 For use in hydraulic systems where a general purpose oil with anti-corrosion properties is needed.	MIL-L-15017	2135-H	5 gal drum 55 gal drum (16 gage) 55 gal drum (18 gage)	9150-265-7305 9150-265-7303 9150-265-7304	
Hydraulic fluid, Non-Petroleum. (Non-Mineral)	For hydraulic brake systems.		HB	1 pt screw top can 1 gal screw top can	9150-190-0932 9150-231-9071	
Hydraulic fluid, Petroleum Base. (Mineral)	For use in hydraulic mechanisms, as prescribed.	MIL-H-13919	OH	1 qt screw top can 1 gal can 5 gal can	9150-265-9407 9150-386-9687 9150-252-6180	Don't use in hydraulic brake systems.
Hydraulic fluid, Petroleum Base. (Mineral)	For use in Delco shock absorbers, and in hydrospring and hydropneumatic recoil mechanisms at all temperatures.	MIL-O-5606	OHA	1 qt screw top can 1 gal can 55 gal drum	9150-252-6383 9150-223-4134 9150-265-9408	This is your "Pink Lady" fluid. Don't use in hydraulic brake systems.
Hydraulic fluid, Non-Petroleum, Automotive (Arctic Type). (Non-Mineral)	A light fluid for use in brake systems under sub-zero conditions.	MIL-H-13910	HBA	1 gal can	9150-252-6375	This is a light hydraulic fluid for use under Arctic conditions. This supersedes specification USA 2-138.
Hydraulic fluid, Petroleum Base, (Recoil Special). (Mineral)	For use in hydrospring and hydropneumatic artillery recoil mechanisms.	MIL-H-13866	RS	1 qt screw top can 1 gal can	9150-252-6377 9150-252-6374	A special recoil hydraulic fluid. Don't use in hydraulic brake systems.
Hydraulic fluid, Petroleum Base, (Preservative, hydraulic equipment). (Mineral)	With additives, for use as a preservative oil in all aircraft hydraulic systems, automatic pilots, and shock struts; as testing and flushing oil for hydraulic components.	MIL-O-6083B	OHC (Type 1)	1 qt screw top can 1 gal can 5 gal can	9150-265-9413 9150-265-9412 9150-265-9414	Don't use in hydraulic brake systems, or systems with rubber seals, lines & gaskets.
Hydraulic fluid, Non-Petroleum Base, Automotive (Non-Mineral)	For use in Houdaille shock absorbers.	JAN-F-461	SAH	1 gal can	9150-261-8328	Chemically treated to give a pour point of —30° F.

*All are QMC items



WE HAVE THE WORLD'S BEST EQUIPMENT... *Take care of it*

RECOIL FLUIDS

Symbol	Container Size	FSN*	Remarks
2075-H	5 gal drum	9150-240-2254	
	55 gal drum (16 gage)	9150-257-5439	
	55 gal drum (18 gage)	9150-240-2255	
2110-H	5 gal drum	9150-240-2256	
	55 gal drum (16 gage)	9150-261-8286	Don't use in non-mineral hydraulic systems.
	55 gal drum (18 gage)	9150-240-2257	
2135-H	5 gal drum	9150-265-7305	
	55 gal drum (16 gage)	9150-265-7303	
	55 gal drum (18 gage)	9150-265-7304	
HB	1 pt screw top can	9150-190-0932	
	1 gal screw top can	9150-231-9071	
OH	1 qt screw top can	9150-265-9407	Don't use in hydraulic brake systems.
	1 gal can	9150-386-9687	
	5 gal can	9150-252-6180	
OHA	1 qt screw top can	9150-252-6383	This is your "Pink Lady" fluid. Don't use in hydraulic brake systems.
	1 gal can	9150-223-4134	
	55 gal drum	9150-265-9408	
HBA	1 gal can	9150-252-6375	This is a light hydraulic fluid for use under Arctic conditions. This supersedes specification USA 2-138.
RS	1 qt screw top can	9150-252-6377	A special recoil hydraulic fluid. Don't use in hydraulic brake systems.
	1 gal can	9150-252-6374	
OHC (Type 1)	1 qt screw top can	9150-265-9413	Don't use in hydraulic brake systems, or systems with rubber seals, lines & gaskets.
	1 gal can	9150-265-9412	
	5 gal can	9150-265-9414	
SAH	1 gal can	9150-261-8328	Chemically treated to give a pour point of −30° F.

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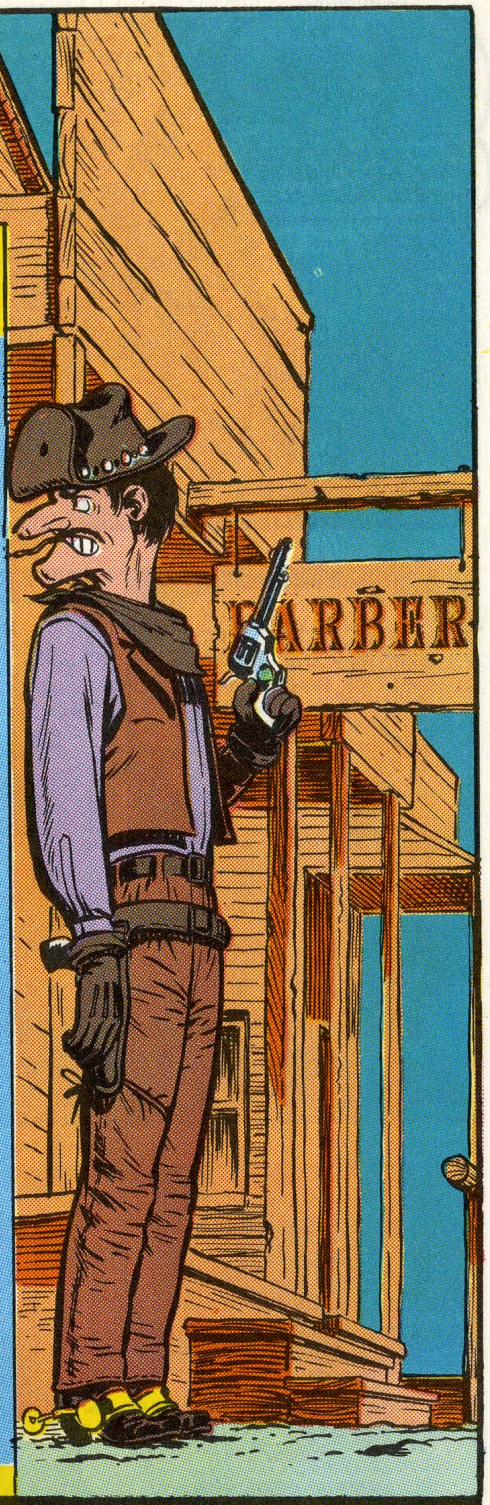
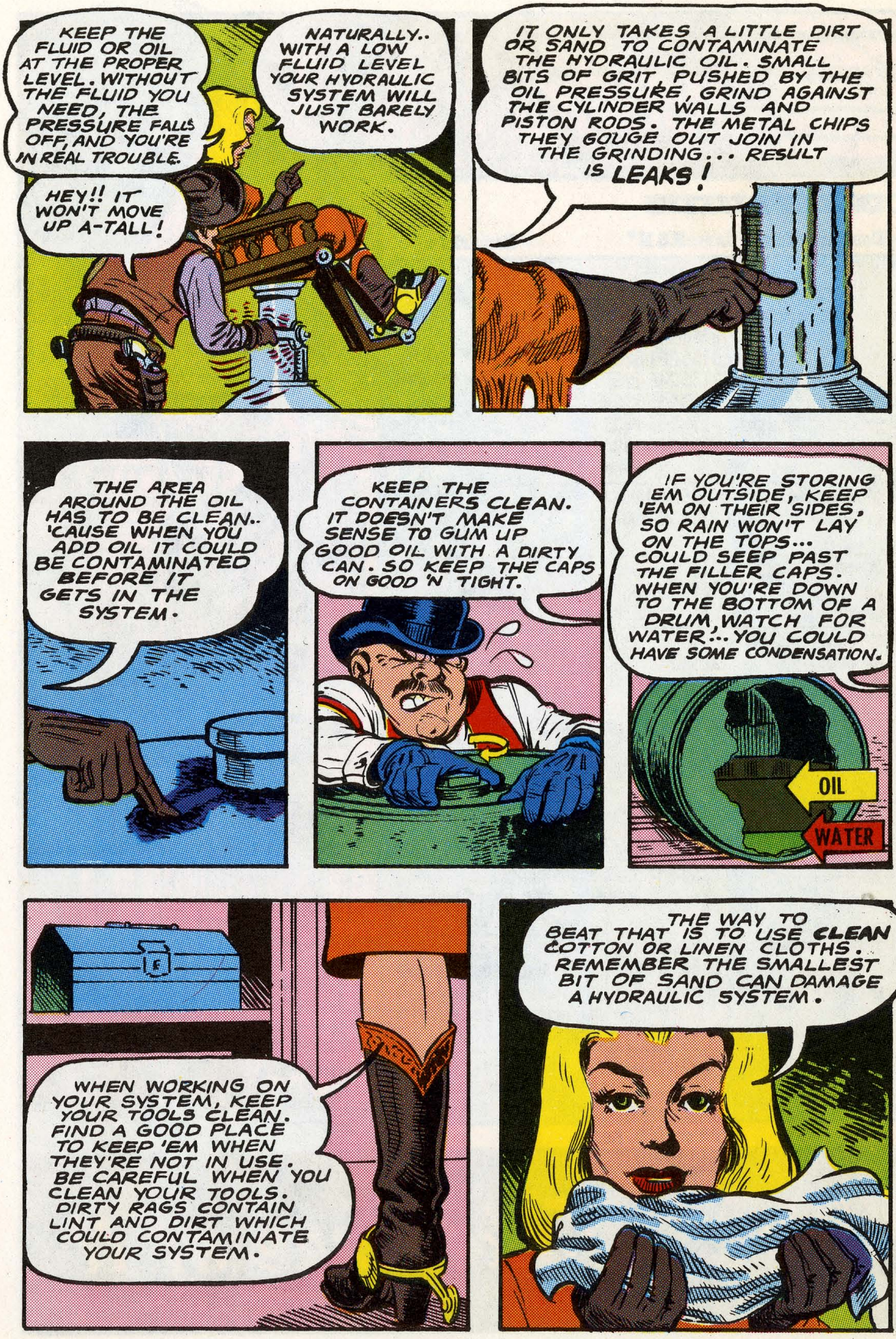
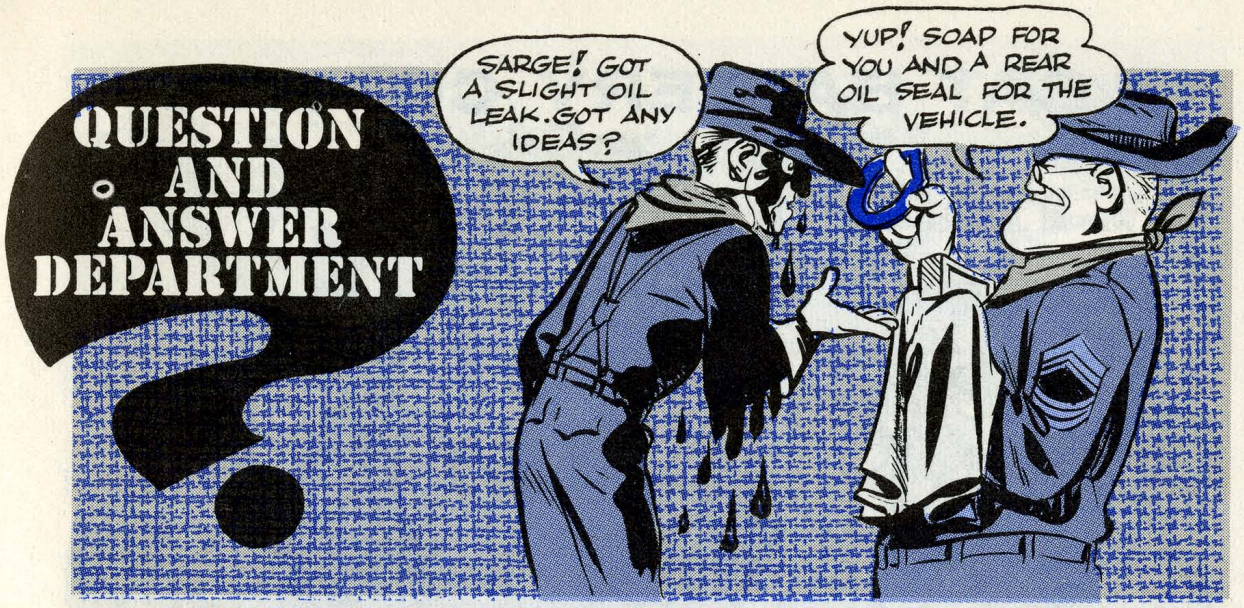


QUIPMENT . . . *Take care of it*


KEEP THE FLUID OR OIL AT THE PROPER LEVEL. WITHOUT THE FLUID YOU NEED, THE PRESSURE FALLS OFF, AND YOU'RE IN REAL TROUBLE.
NATURALLY.. WITH A LOW FLUID LEVEL YOUR HYDRAULIC SYSTEM WILL JUST BARELY WORK.
HEY!! IT WON'T MOVE UP A-TALL!
IT ONLY TAKES A LITTLE DIRT OR SAND TO CONTAMINATE THE HYDRAULIC OIL. SMALL BITS OF GRIT, PUSHED BY THE OIL PRESSURE, GRIND AGAINST THE CYLINDER WALLS AND PISTON RODS. THE METAL CHIPS THEY GOUGE OUT JOIN IN THE GRINDING... RESULT IS LEAKS!
THE AREA AROUND THE OIL HAS TO BE CLEAN.. 'CAUSE WHEN YOU ADD OIL IT COULD BE CONTAMINATED BEFORE IT GETS IN THE SYSTEM.
KEEP THE CONTAINERS CLEAN. IT DOESN'T MAKE SENSE TO GUM UP GOOD OIL WITH A DIRTY CAN. SO KEEP THE CAPS ON GOOD 'N TIGHT.
IF YOU'RE STORING 'EM OUTSIDE, KEEP 'EM ON THEIR SIDES, SO RAIN WON'T LAY ON THE TOPS... COULD SEEP PAST THE FILLER CAPS. WHEN YOU'RE DOWN TO THE BOTTOM OF A DRUM, WATCH FOR WATER... YOU COULD HAVE SOME CONDENSATION.
OIL
WATER
WHEN WORKING ON YOUR SYSTEM, KEEP YOUR TOOLS CLEAN. FIND A GOOD PLACE TO KEEP 'EM WHEN THEY'RE NOT IN USE. BE CAREFUL WHEN YOU CLEAN YOUR TOOLS. DIRTY RAGS CONTAIN LINT AND DIRT WHICH COULD CONTAMINATE YOUR SYSTEM.
THE WAY TO BEAT THAT IS TO USE CLEAN COTTON OR LINEN CLOTHS. REMEMBER THE SMALLEST BIT OF SAND CAN DAMAGE A HYDRAULIC SYSTEM.

CHECK FOR LEAKS, LOOK FOR OIL SLICKS WHERE THEY SHOULDN'T BE, AND FEEL FOR LOOSE CONNECTIONS.
THET LI'L GAL KNOWS WOT SHE'S A-TALKIN 'BOUT.
ONE THING TO WATCH FOR IS EMULSIFIED OIL. THIS GENERALLY RESULTS FROM AIR BEING FORCED INTO THE SYSTEM. EMULSIFIED OIL COULD BE THICK AND CREAMY, FOAMY, MILKY, AND HAVE LOTS OF BUBBLES.
THERE'S ONE THING YOU DON'T WANT IN YOUR HYDRAULIC SYSTEM, AND THAT'S AIR. HYDRAULIC OIL OR FLUID AND AIR DON'T MIX. ONCE THEY GET TOGETHER, YOU'VE GOT TROUBLES THE OIL GETS FILLED WITH BUBBLES AND GETS FOAMY, AND YOU DON'T GET THE PRESSURE YOU NEED. THE REMEDY FOR THIS IS "BLEEDING" AND YOU SHOULD HAVE PROPER INSTRUCTION IN ORDER TO DO THIS RIGHT.
EMULSIFIED OIL IN YOUR SYSTEM USUALLY CAUSES ERRATIC OPERATION.
YOUR HYDRAULIC SYSTEM NEEDS EXERCISE TO KEEP IT UP TO PAR. EXERCISING PUTS LUBE ON INTERIOR PARTS, AND THAT KEEPS 'EM FROM RUSTING.
SYSTEMS SHOULD BE LOOKED OVER NOW AND THEN, FOR RIGHT OIL LEVEL, RIGHT OIL AND PROPER WORKING ORDER.

WELL, FELLAS. THAT'S TH' STORY ON HYDRAULIC SYSTEMS. AND REMEMBER TO KEEP 'ER IN SHAPE. CHECK FOR DIRT, AIR AND PRESSURE LEAKS AND USE GOOD OLD PREVENTIVE MAINTENANCE.
GOT IT, FELLAS?
YUP!
YUP!
ADIOS, MA'AM!
MAKE Y'R PLAY, VARMIT!!
BANG
WAL, I'LL BE! THEY BOTH MISSED! THIS GUN COULDN'T HIT A BARN AT THREE PACES!
THIS 'UN NEITHER. THE MAINTENANCE ON BOTH THESE GUNS IS THE WUST AH'VE EVUH SEED!



HIGH PRESSURE LEAK?

Dear Half-Mast,

Crankshaft rear oil seal retainers on some of the engines on our G742 2½-ton trucks are leaking excess amounts of oil.

Could this be caused by pressure build-up in the crankcase?

SFC J. H. J.

Dear SFC J. H. J.,

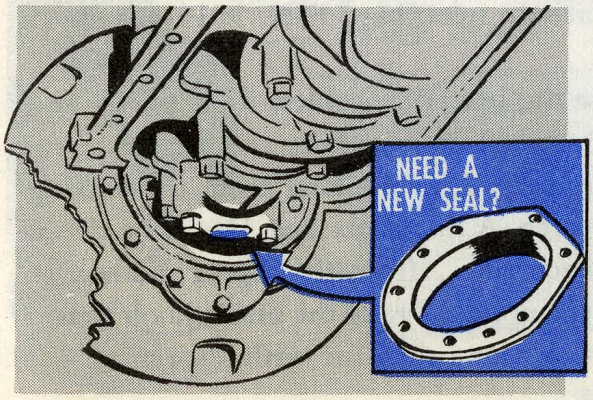
There's a good chance that your guess is right, Sarge. This kind of oil leak may be caused by oil pressure build-up in the crankcase—either from keeping the oil level too high or from running your vehicles too long with fording valves closed.

If you don't open crankcase ventilator after fording . . . pressure build-up's likely to force oil through rear crankshaft retainer seal . . . dripping from the flywheel housing.

Donaldson valve—to stop crankcase pressure build up, keep its inner workings clear.

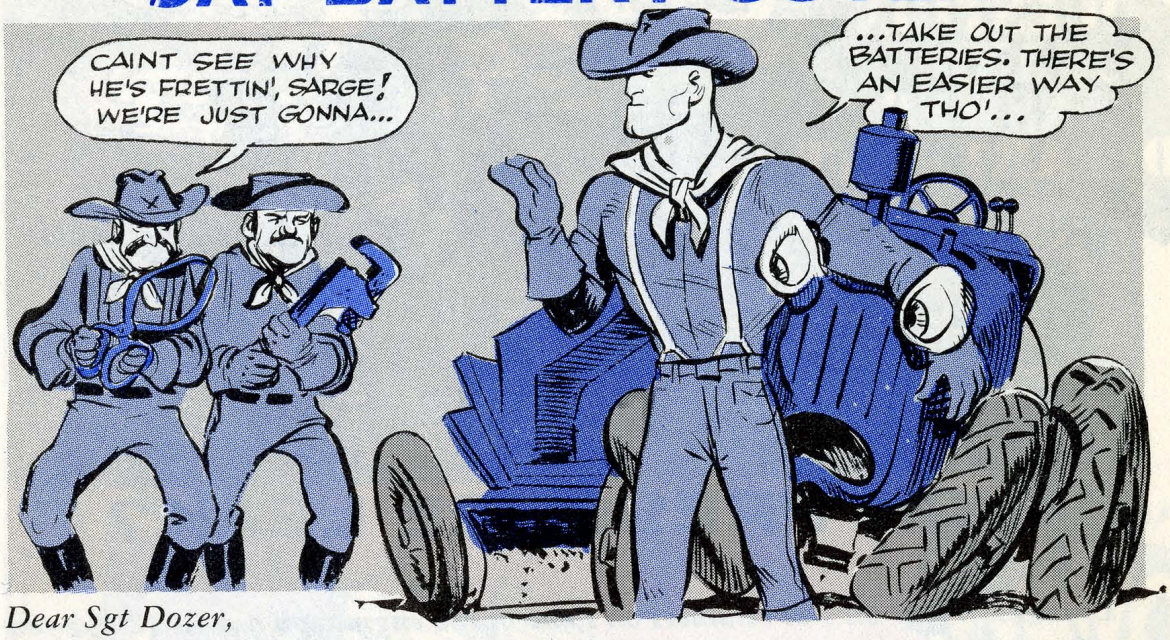
Pressure build-up in the crankcase also can be caused by dirty or plugged-up breathers. So, check these whenever you're servicing the vehicle.

If you've still got leaky seals after you make sure there's no excess crankcase pressure, have your support unit check to see if there's too much end-play in the crankshaft or a worn rear main bearing. And if the oil seal itself is in unserviceable condition, a newer type, Retainer, rear oil seal, w/seal, assy, FSN 2540-040-2179, should be installed.



Half-Mast

CAT BATTERY COVER



Dear Sgt Dozer,

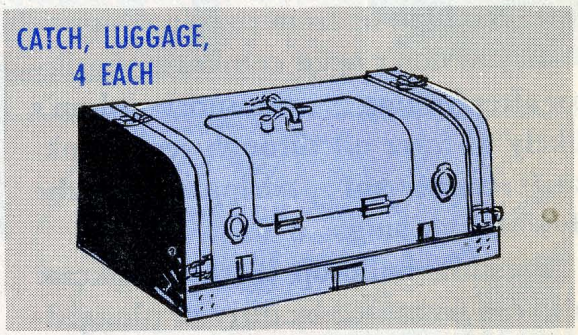
In order to check the water level in the batteries on our Caterpillar Model 12 Grader, ST series, we have to remove the batteries or loosen and slide them out. Since this is part of our regular PM services, we spend a lot of time just taking them out and putting them back in again.

There must be an easier way.

Sgt C. J. E.

Dear Sgt C. J. E.,

There sure is. Got the scoop for you right here...a removable battery cover you can make or your support unit can make for you. Maybe your DSU can handle it at the same time they're making other repairs on the grader.

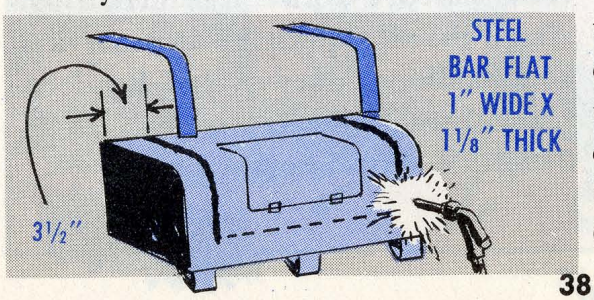


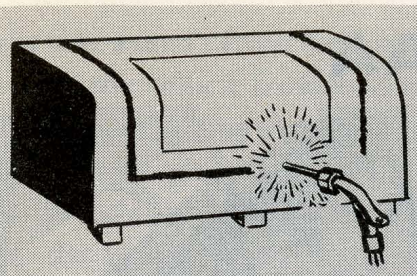
Here's all they'll need:

Four nickel-plated steel luggage catches, loop-locking type (American Cabinet Hardware Co. WX6292 or equal).

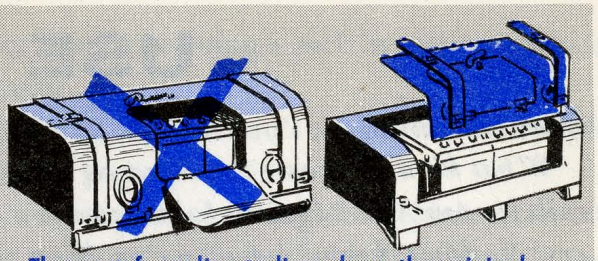
One 44-in x ⅛-in x 1-in hot-rolled carbon steel bar, FSN 9515-541-9645 (Ord).

They'll want to disconnect and remove the batteries, cables, light wires, and two reflectors to keep them from being damaged by the heat from the cutting torch. A line is marked 3½ inches from each side...from the top of the box to the upper edge of the pintle hook brace. Cut along this line with a torch.





Next cut from line-to-line at the upper edge of the pintle hook brace.



Then cut from line-to-line along the original weld on the back of the box. A guy'll have to get under the rig to make this cut.

Now take off the cover section. All the flame cut edges of the cover and box'll have to be trimmed by filing or grinding.

Cut two pieces of the flat steel bar 20½ inches long. Then bend and weld to cover.

The four luggage catches and hooks are alined to hold the cover tight to the box.

Finish 'er up by cleaning and painting...and by putting the batteries, cables, wires, and reflectors back.

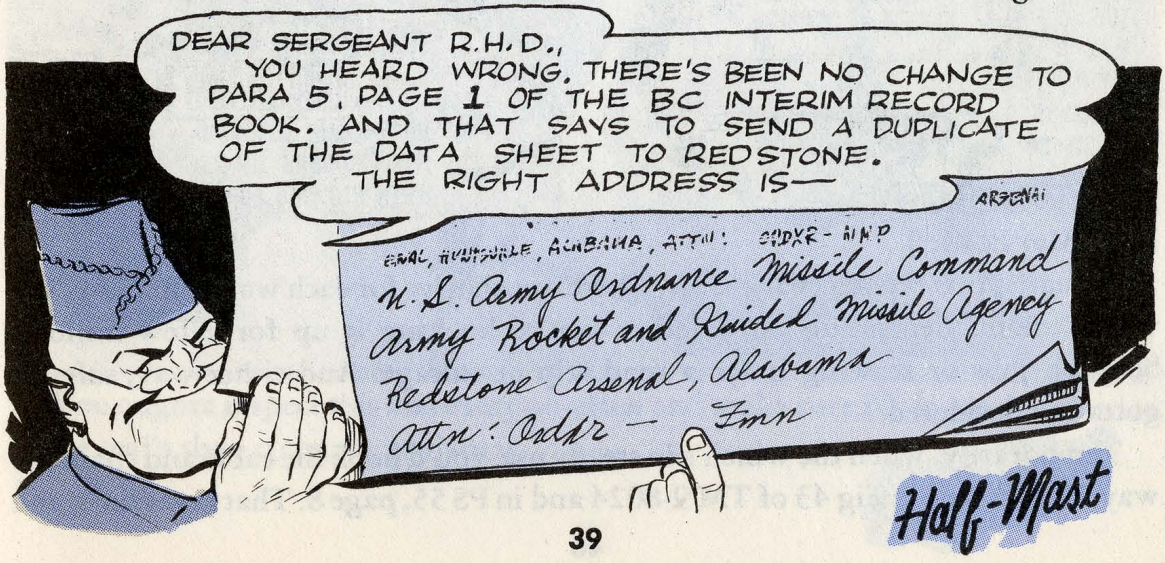
Sgt Dozer

SEND IT IN

Dear Half-Mast,

We've got a problem at our Nike-Ajax site. In the Battery Commander's Interim Record Book there is a Serial Number Data Sheet. We used to send a copy of the sheet to the people at Redstone Arsenal until we heard from somewhere that it's no longer necessary. Did we hear right?

MSgt R. H. D.

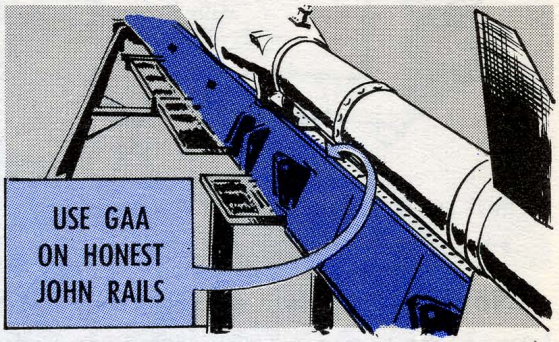


USE GAA

Dear Half-Mast,

What kind of grease can I put on the rails for our M289 Honest John Launchers? I don't know what we've been using, but it gets hard in a couple days and has to be chipped off.

MSgt. J. S.



Dear Sergeant J. S.,

I don't know what you've been using either . . . but I'll bet it isn't GAA. That's the stuff you use on the rails, according to LO 9-3060, before and after firing. LO 9-3162 also tells you to use GAA on the rails for the Little John launcher.

GAA doesn't get so hard it has to be chipped off. If the container says you were issued GAA and you still wind up with something you have to chip off, you'd better launch a UER.

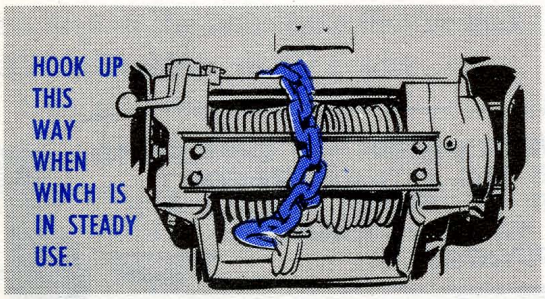
Half-Mast

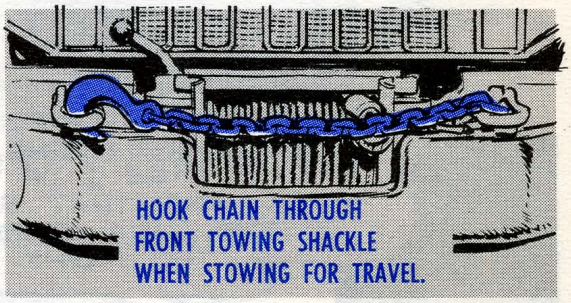
TIE IT SAFE

Dear Half-Mast,

Paragraph 49c(4) on page 75 of TM 9-8024 says the winch cable and chain will be hooked through the front towing shackle on the 2½-ton truck. But the pictures on page 74 of the TM and in PS 55 show it rigged a different way. Is this an authorized change?

Maj B. M. J.





Dear Maj B. M. J.,

Actually, this is not a change, Sir. There's authority for each way of hooking the winch chain, depending on whether you're hooking it up for a few minutes between jobs or stowing it for a road trip or storage. And either way, safety's gotta be considered.

Temporarily, when the winch's in steady use, you'd hook the cable and chain the way it's pictured in Fig 43 of TM 9-8024 and in PS 55, page 8. That saves time, and

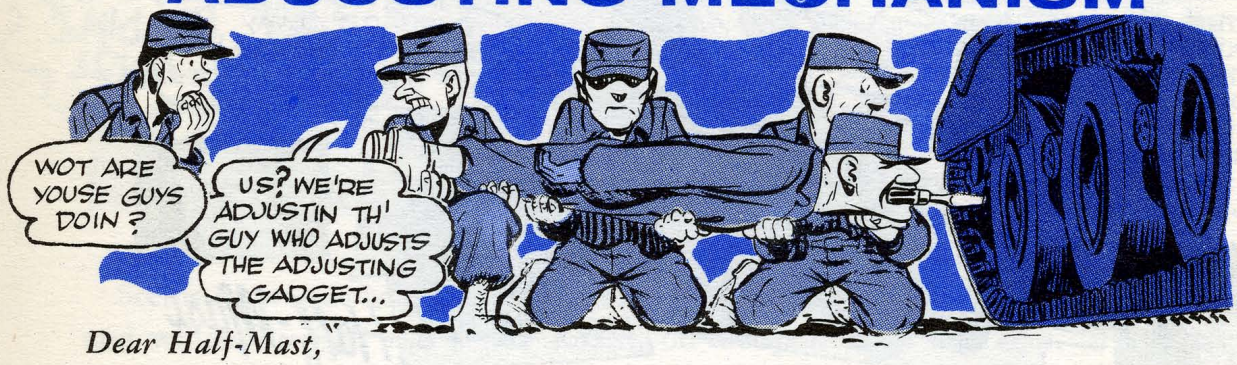
might save a man's front teeth by keeping him from doing a rock 'n roll on it while servicing the vehicle from atop the bumper.

But comes the time to travel or store the vehicle, the chain's to be hooked through the front towing shackle like the TM says in para 49c(4).

To be safe when it's hooked either way, a man servicing the vehicle from on toppa the bumper better hang onto the radiator grille with his free hand.

Half-Mast

ADJUSTING THE ADJUSTING MECHANISM



Dear Half-Mast,

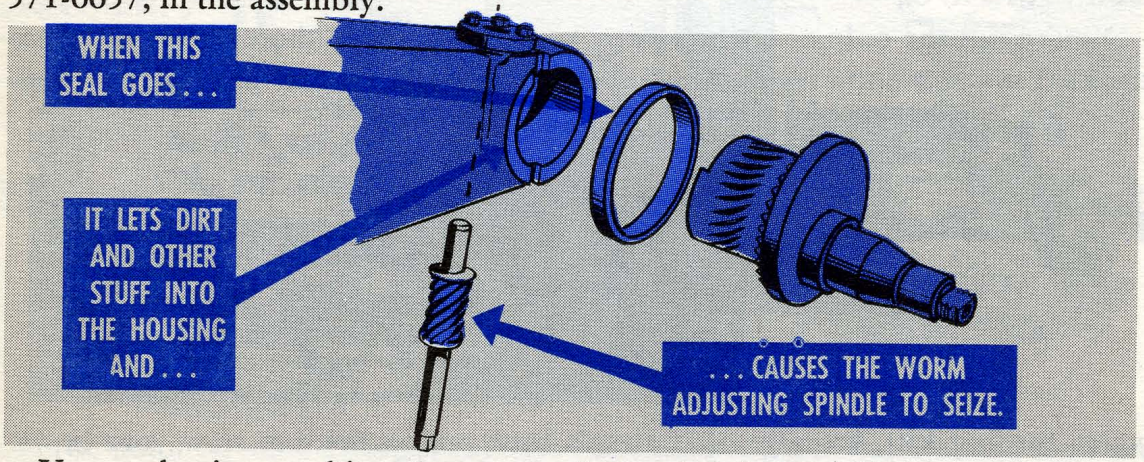
We're having troubles with the M56 90-mm Scorpion's track adjusting mechanism. It just doesn't. It looks to us like the idler spindle and idler spindle adjusting worm seized in the idler spindle housing.

What's it look like to you?

CWO B. F.

Dear Mr. B. F.,

Your trouble is probably coming from the failure of the rubber seal, FSN 2530-571-6657, in the assembly.



You oughta inspect this seal every-so-often and make sure it's in working order. If the seal's shot, o'course, replace it.

Half-Mast

G742 IN...G749 OUT

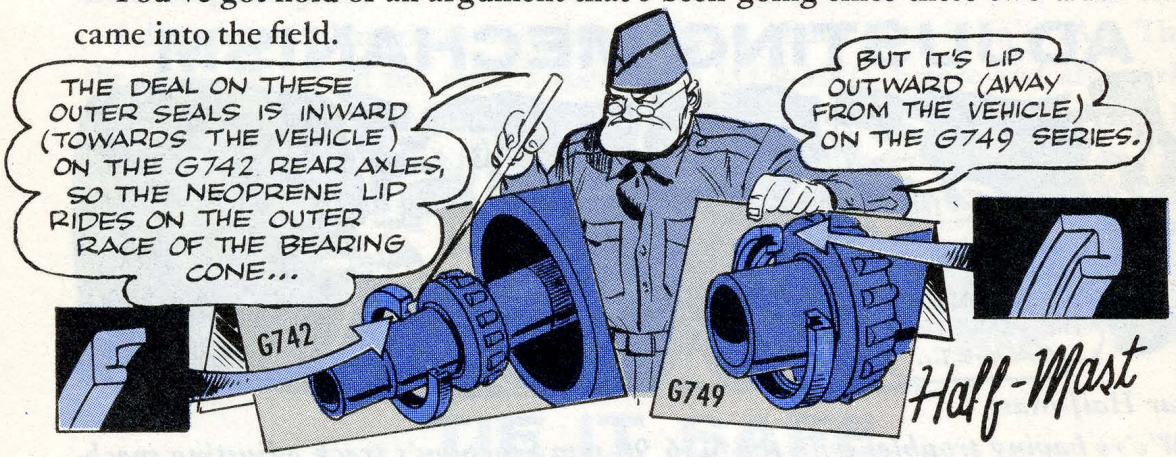
Dear Half-Mast,

What is the correct way of installing the rear wheel outer bearing seal on the G742 and G749-series 2½-ton trucks? One of the guys said it goes on with the rubber lip facing in towards the vehicle. Another guy said it goes on with the rubber lip facing away from the vehicle

SP4 R. P. M.

Dear SP4 R. P. M.,

You've got hold of an argument that's been going since these two truck series came into the field.



STOWS YOUR BOWS

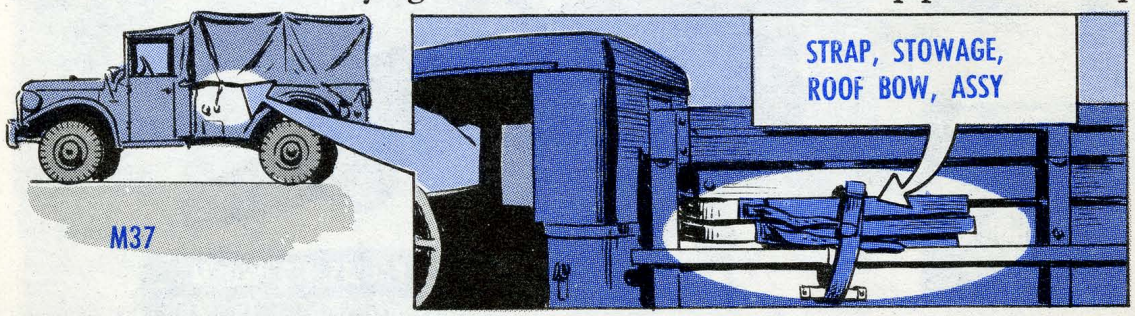
Dear Half-Mast,

We can't seem to find out what the straps are for on the side of the ¾-ton M37 and M42's. Could you please enlighten us?

SFC R. R. S.

Dear Sgt R. R. S.,

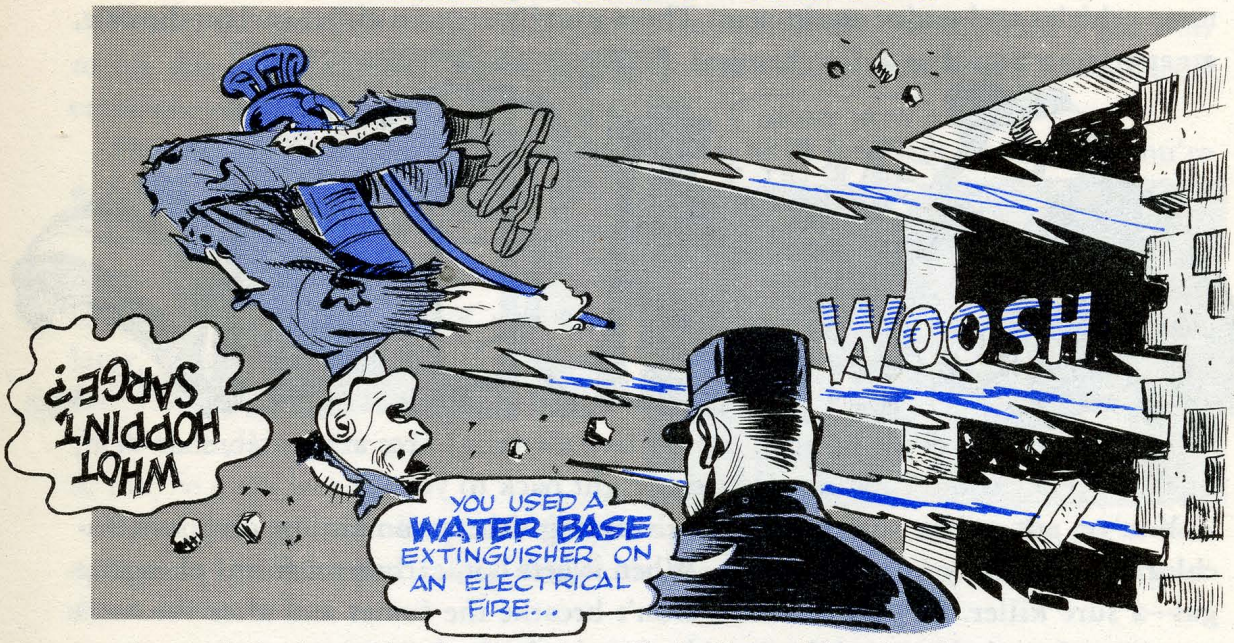
You're not the only one who's been wondering about those straps on those trucks. I saw one outfit trying to use them to stow the exhaust pipe for the deep-



water fording kit. Actually, that strap's been put on there to stow your bows. The name of that strap is what clues you—it's called Strap, stowage, roof bow, assy.

Half-Mast

WHY NOT NOW?

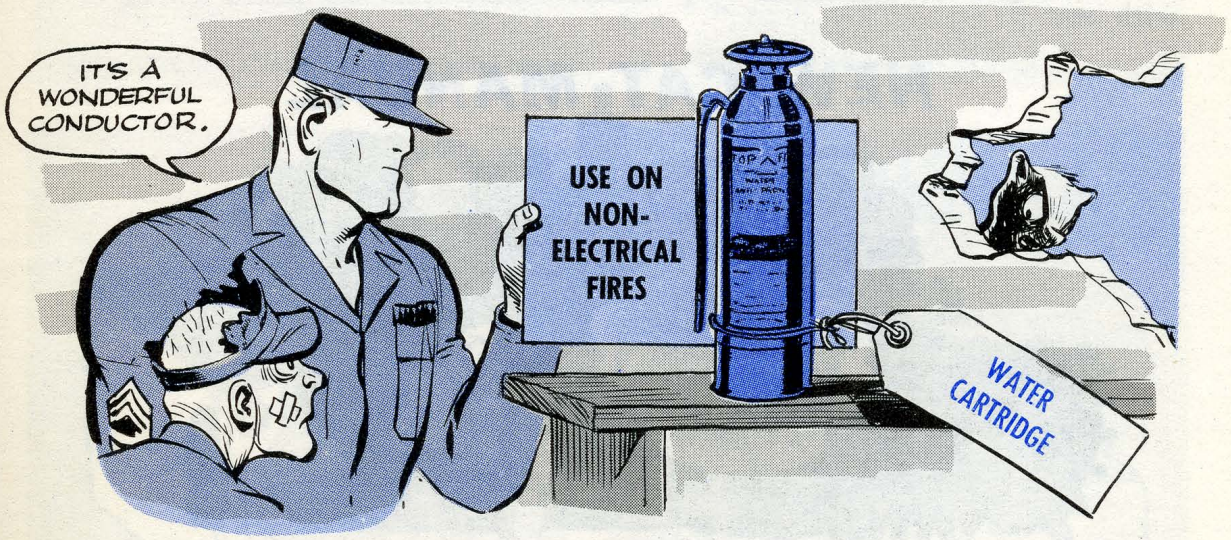


Around the barracks they call him Fireball—and here's why:

Seems he was at headquarters one day when the switchboard began to smoke and whine. Fireball was a real Johnny-on-the-spot. Calm and cool, he yanked the nearest extinguisher off the wall and casually aimed the nozzle.

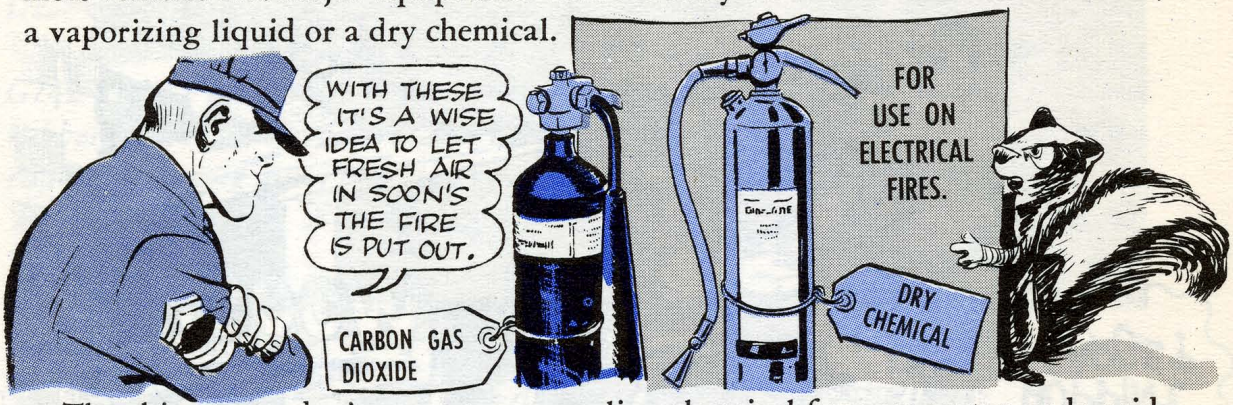
And then—wham—A phfft, and a flash later he was out flat... and another phfft after that a short-circuit in the next office had another fire in the making.

Turned out Fireball's extinguisher was a water-cartridge type—and water conducts electricity!



The point is, some extinguishers are to be used on electrical fires and some are not. Squirting water (or any water-based solution) onto a live electrical fire is just like poking a wire into its innards. Chances are you'll get more damage than the fire.

What you need is a non-conductor type extinguisher like the ones found on most vehicles and major equipment. These usually contain either carbon dioxide, a vaporizing liquid or a dry chemical.



The things you don't want to use on live electrical fires are water, soda-acid, or foam. They could conduct electricity right back to you.

You've got to be real careful with extinguishers containing carbon-tetra-chloride—especially in a closed area. When it gets hot, carbon tet forms phosgene gas—a sure killer. So play it smart. Don't breathe the fumes and after the fire's out, open the windows and doors wide. Let the fresh air in.

It's a good idea to get familiar with the different types of extinguishers and learn their uses and limitations. It'll help you to know that any extinguisher that'll work on an electrical fire will also be of some value in fighting other types of fire. But an extinguisher that'll do a good job on a wood, paper or rubbish fire **may not** work on an electrical fire.

Chances are you've got at least two types within hollering distance of you right now. You'll be doing yourself and everyone else a big favor by getting acquainted with 'em.

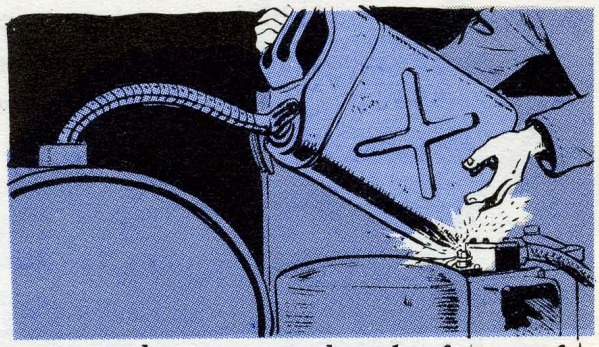
NEW CAT MANUAL

You guys with the Caterpillar D8 Tractor, 9A series, can get a manufacturer's manual for your rig through normal Engineer repair parts channels. Engineer stock number 7610-C-1-0851 gets you the manual which covers all lube and maintenance info.

CAREFUL WITH YOUR CAN

Yessir, the sparks'll really fly if you're careless when you're using 5-gal cans to fill the gasoline tanks of the engine on the Garwood M20A(F) and M20B crane-shovel.

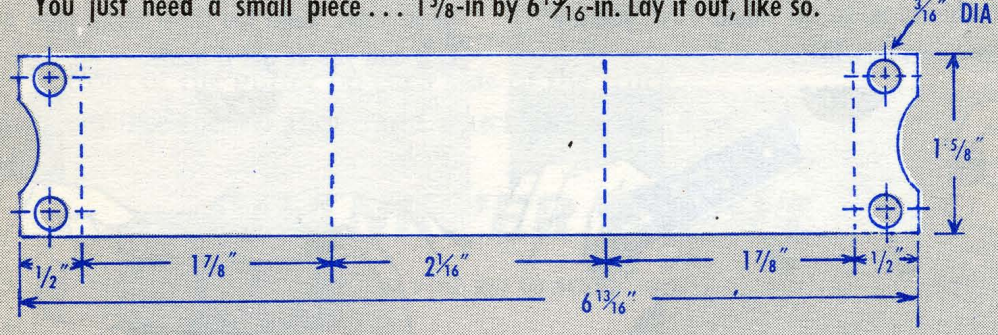
There's no extra room at all, and the can has to be held just right when you're nozzling the gasoline into the tank.



Keep it away from the voltage regulator. You're in real trouble if the can touches the hot terminal of the regulator. Sparks and gasoline don't make for a happy combo. It could make you an A-1 candidate for a hospital bed... or maybe even worse.

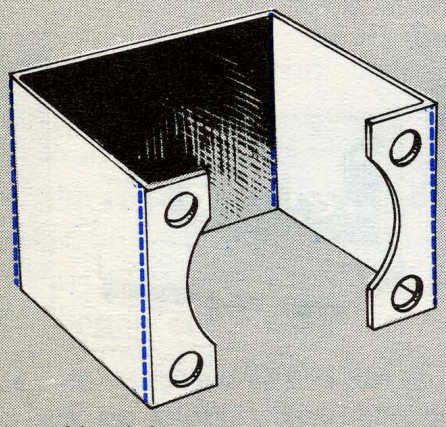
Better yet, you can keep this danger spot under cover and make for a safe operation by making a safety shield for the hot terminal out of some 16-gage sheet steel.

You just need a small piece . . . 1 5/8-in by 6 13/16-in. Lay it out, like so.

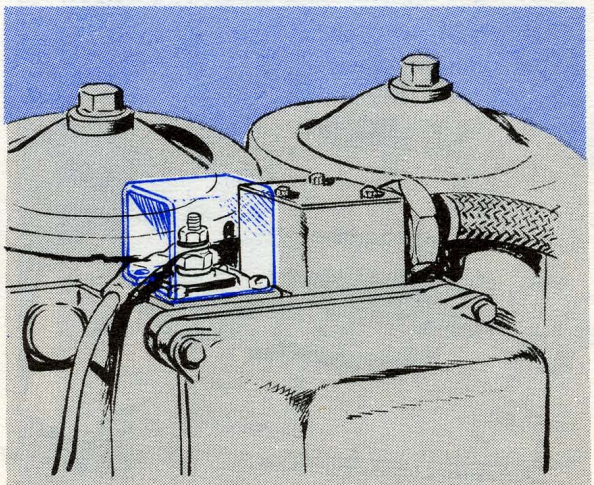


Cut a curve in each end to fit around the terminal.

Then you drill four 3/16 in holes . . .



. . . and bend the piece as shown.



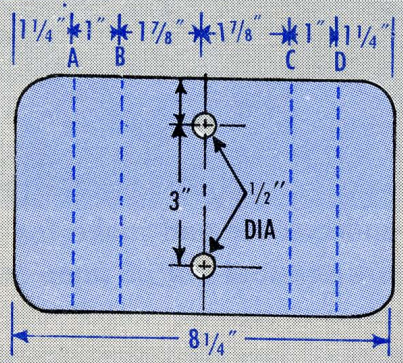
Fit it around the terminal and you're ready to go.

SWITCH WITHOUT HITCH

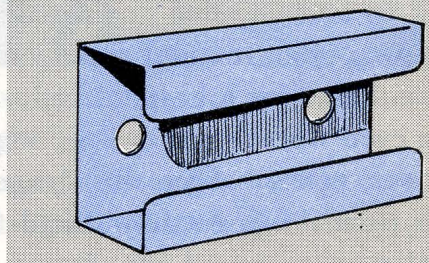
Got some scoop here for keeping your model CE-600-AC/EG, 60 KW, Hol-Gar generator's switches on when they should be on... and off when they should be off.

It's a protective shield that'll cut the chance of accidentally bumping or nudging the switch from one position to the other. If you shove the switch at the wrong time, you could damage the equipment being operated by the generator.

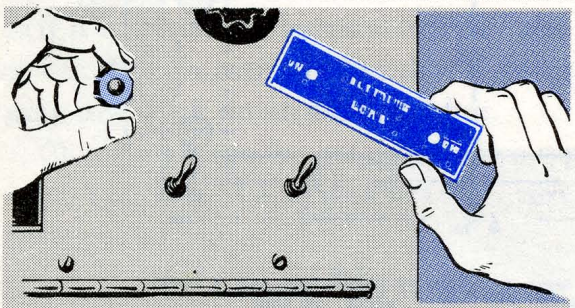
It's no sweat to put on a protective shield. All you need is a piece of 18-gage sheet steel, 5-in by 8¼-in. You can get it as a GE item under FSN 9515-230-6651.



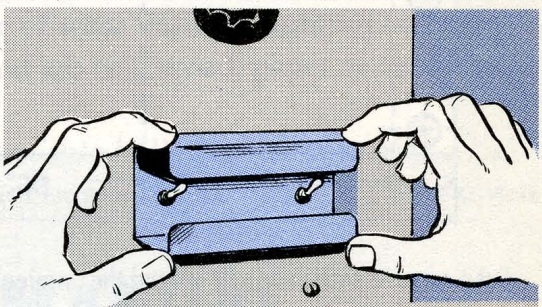
No trouble to make the shield. First, you lay out the steel sheet, like so.



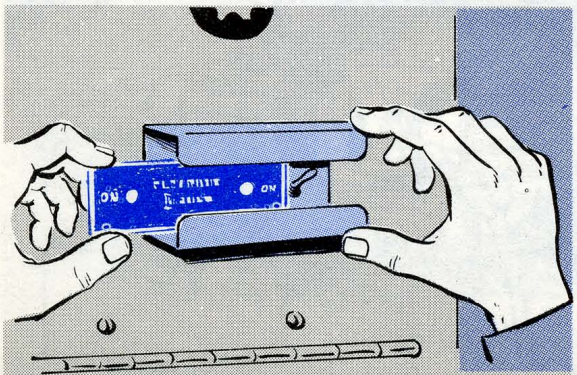
Then, round off the edges. Now, you drill the ½-in holes. Bend the sheet along lines A, B, C, D and you've got it made.



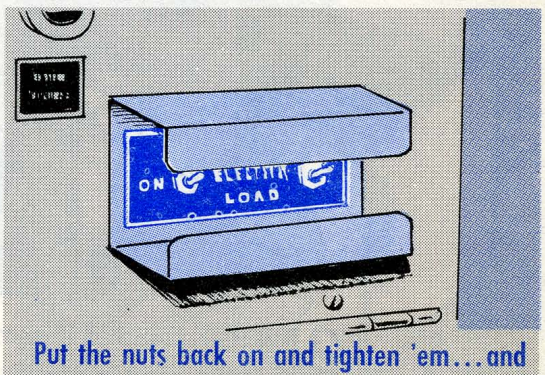
Turning to the generator, you spin the nuts off the switch stems and take off the "load-on and load-off" plate.



Put the shield on the generator with the switch stems protruding through the holes in the shield.



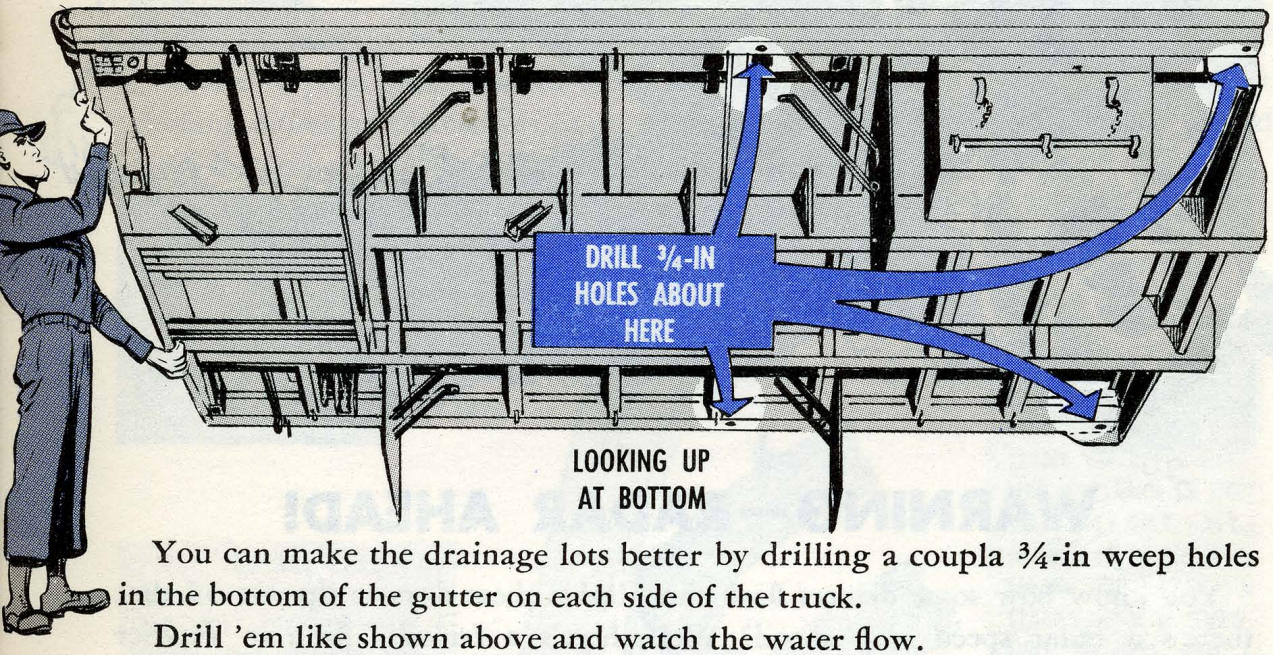
Now you can put the "load-on and load-off" plate over the shield.



Put the nuts back on and tighten 'em... and your switch shield's installed and your job completed.

LET 'EM WEEP

Comes a time when your bridge transport trucks with the stake bodies wanta weep. It happens when rain water puddles in the gutter along side of the truck body.



You can make the drainage lots better by drilling a coupla ¾-in weep holes in the bottom of the gutter on each side of the truck.

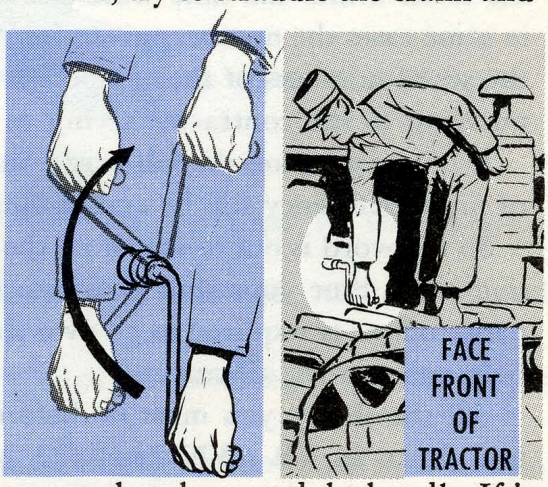
Drill 'em like shown above and watch the water flow.

CRANK 'ER RIGHT

You've got to be careful when you go to start your Caterpillar Tractor, Model D8, series 9A.

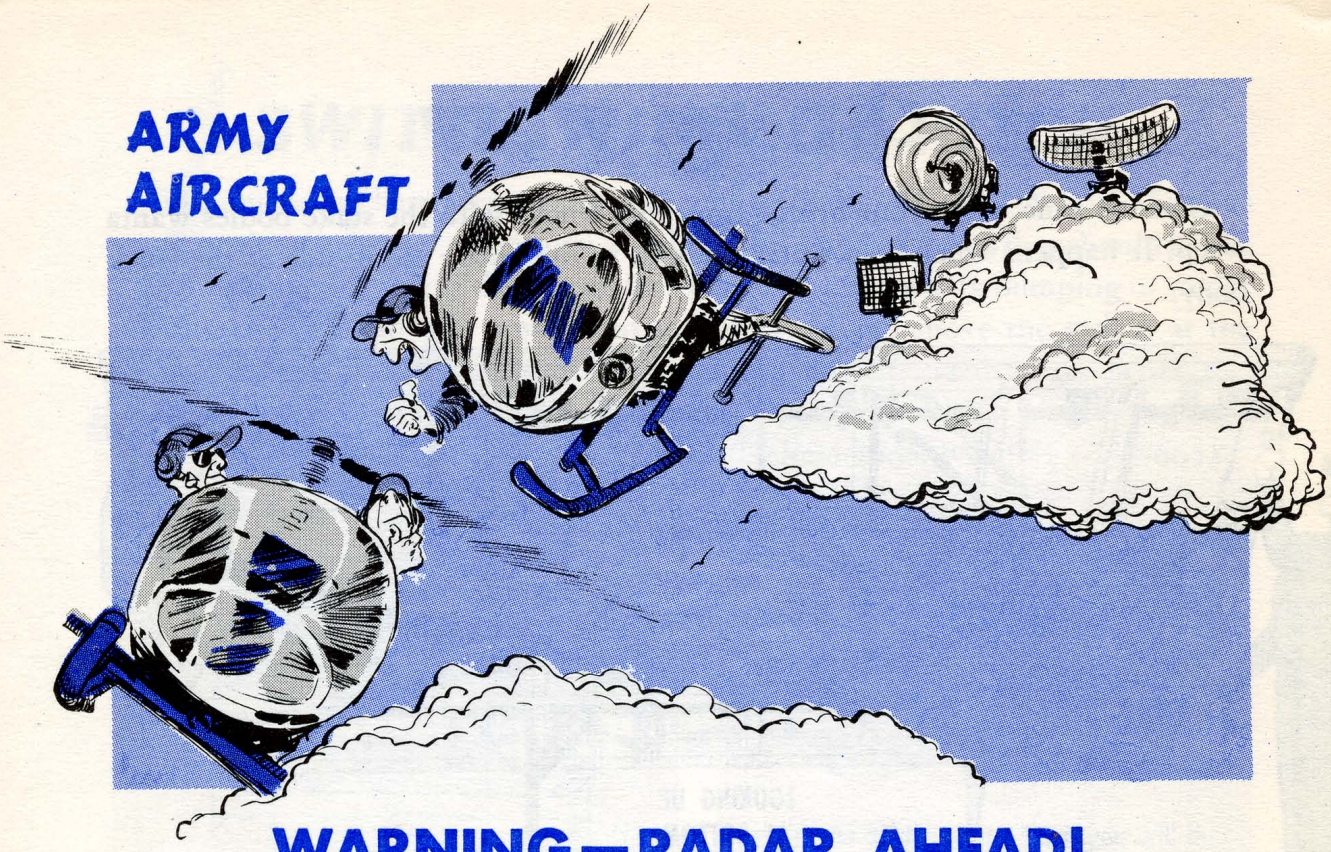
You're asking for trouble if you climb the tracks, try to straddle the crank and make like you're starting an oldtime truck.

Sure, you've got to start it by cranking, but here's the way to do it. You mount the tracks, face the front of the tractor, grasp the crank handle, and pull up and towards you in one continuous motion.



If the engine doesn't start the first time around, you disengage the crank and start all over again with the handle at the bottom of its swing.

When you grab the crank, you don't wrap your thumb around the handle. If it kicks and you don't let go, you could end up with a busted hand—or get sent sprawling.



WARNING—RADAR AHEAD!

You know how some drivers flash their lights these days to tip you off that there's a radar speed trap ahead? Well, here's a friendly flash in another direction.

Suggest you get legal with all your aircraft historical records. Because there will be greater emphasis on 'em in CMI's from now on, and there'll be a stiff review of the records **before** aircraft are scheduled into SCAMP.

Seems some ships have been turning up with the records sort of confused, to say the least. Either the time wasn't correctly entered for the major components, or in some cases the numbers given for components in the records didn't agree with the serial numbers of the components actually on the aircraft. Which is a little puzzling to the contractor trying to SCAMP the ship.

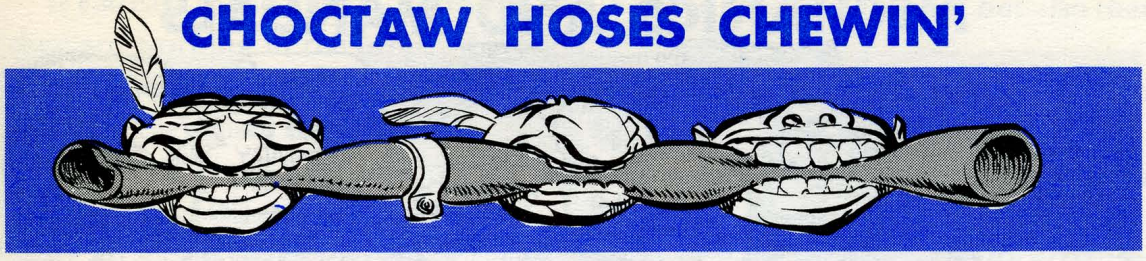
It not only makes the job harder and more expensive, it just might let a safety of flight deficiency slip by and endanger lives.

So the word is out to watch all the records. Take a tip and be ready for inspection every time your ship goes into field maintenance. Also your field maintenance officer is required to go over the records of aircraft going to SCAMP. He'll help you get 'em all current.

All the things you must do before you can schedule a ship into SCAMP are laid down in TB AVN 23-8 (22 Aug 57). It tells you what work you are responsible for, how to schedule the ship at the contractor's, what has to go with it, and all the poop.

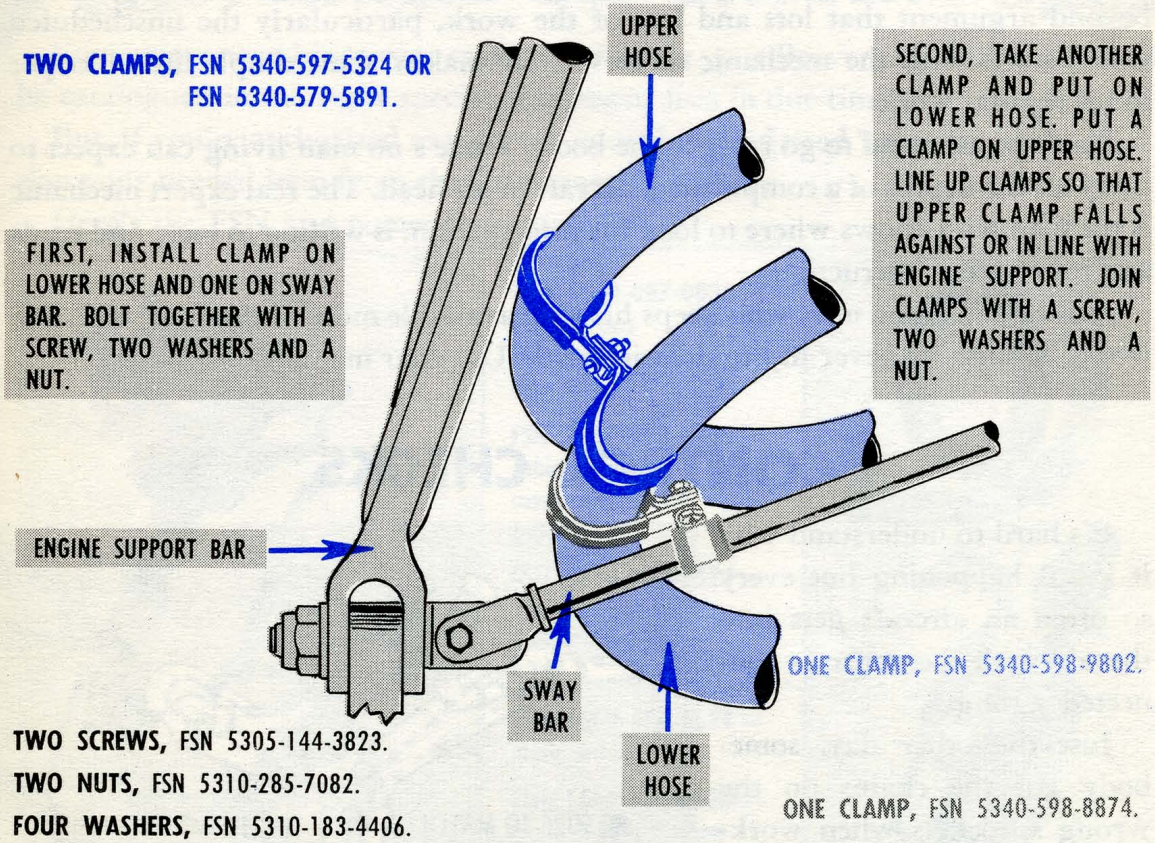
Read, heed, and then relax. OK?

CHOCTAW HOSES CHEWIN'



There've been some cases of the main oil hoses on your Choctaws (H-34A s) chafing, either on themselves or on the engine support. It's the main hoses to and from the power pack to the oil cooler and tank that need attention.

So please go look at yours and see if they have been clamped in such a way that'll stop this chafing. If not here's what you'll need to do the job:



You take off the clamps that're already there (AN742-26C, AN742-30C and two AN742-14C).

If you find that the FSN 5340-597-5324 clamps are squeezing your hose, use the FSN 5340-579-5891 clamps instead.

Now line up the clamps so the upper clamp falls against, or right in line with, the engine support then join the clamps with a screw, two washers and a nut.

That's all. As you can see, the hoses are clamped firmly to the sway bar, held apart, and protected from any chafing on the engine support.

MECHANICS AND MANUALS

Might be a nuisance, and sometimes it seems almost impossible to go running over to the tech library to check the TM 1's every time you have some work to do on your aircraft.

But believe it, the condition of the ships coming into Field Maintenance proves beyond argument that lots and lots of the work, particularly the unscheduled work, starts with the mechanic or crew chief makin' some simple little blooper in his regular work.

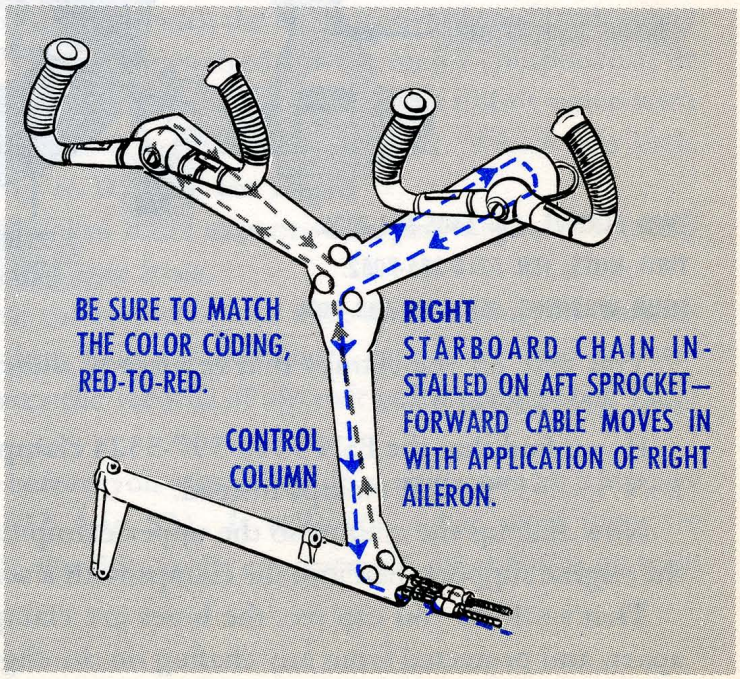
Don't be ashamed to go refer to the book. There's no man living can expect to carry all the details of a complicated aircraft in his head. The real expert mechanic is the man who knows where to look for information, is willing to look, and reads and follows the instructions.

And he's also the man who keeps his ship available more of the time, with less work, because he never has to do a job over. Use your manuals!

CONTROL CHECKS

It's hard to understand why it keeps happening but every so often an aircraft gets into the air with the controls connected wrong.

Just the other day, somebody got the chains on the wrong sprockets when working on a Beaver (L-20) contral column—this reverses the aileron action. The mistake is easy enough to make, but how in the world did it ever get by both the crew chief and the pilot on pre-flight and run up??

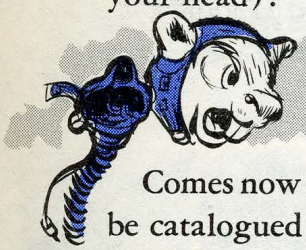


It's so easy to check your controls, not only to see that they are free, but also that they are working in the proper direction.

Just stick your head out and look back at the elevators. Do they come UP when you pull the wheel BACK.

Now look at the aileron. Does the left aileron go DOWN and the right aileron up when you roll the wheel RIGHT?

By all means make that check each and every pre-flight and especially after the control column chains were off. It will keep the crew chief's good name as a careful mechanic, and it may very well keep the pilot alive. What can you lose (except your head)?

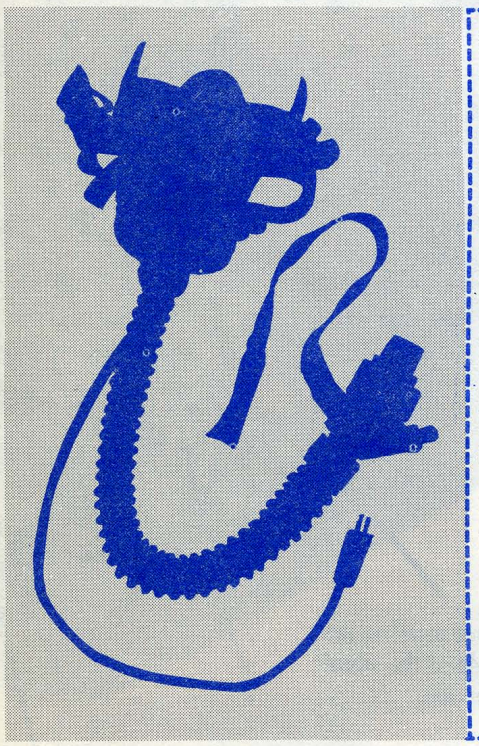


BEAVERS GET OXYGEN

Comes now portable oxygen systems for use in your Beavers (L-20A's). They'll be catalogued in the right special equipment lists in due time.

But, if you're authorized oxygen for your ships and need 'em now, just requisition your needed item from the Transportation Corps.

Here's the FSN and nomenclature poop:



FSN 1660-487-0035 — Cylinder and regulator assembly, type A-1

FSN 1660-692-3939 — Tubing, oxygen mask to regulator (48-in)

FSN 1660-180-5534 — Bracket Assembly, portable oxygen, A-1

FSN 1660-516-6621 — Mask, A-13A, Large

FSN 1660-516-6620 — Mask, A-13A, Medium

FSN 1660-516-6607 — Mask, A-13A, Small

And when you get your masks, check to see that AFTO 15X5-3-2-1 (1 Oct 56, rev 27 Jan 57) "Demand Oxygen Mask, Type A-14A" has been complied with (if without microphones).

This involves plugging the hole in the end of the cord duct air tight, and sealing the pressure relief vent.

M48A1 AND M48A2 SUSPENSE STORY— TRACK DOWN

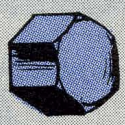
No matter how smooth the engine or transmission is, that M48A1 or M48A2 tank of your'n isn't going to carry you more'n a country mile unless the tracks and suspension system are in good shape.

The new DA Form 2145, Tracked Vehicle and Equipment Record, tells you to check out the tracks and suspension system every time your tank moves out. Item 9 on this trip ticket makes this a triple deal . . . a before-, during- and after-operation—follow along and get to know these trouble spots.

You won't need any special tools or gimmicks—all that's needed is some eyeball-snapping. It's also a good way to beat an inspector from throwing a gig your way.

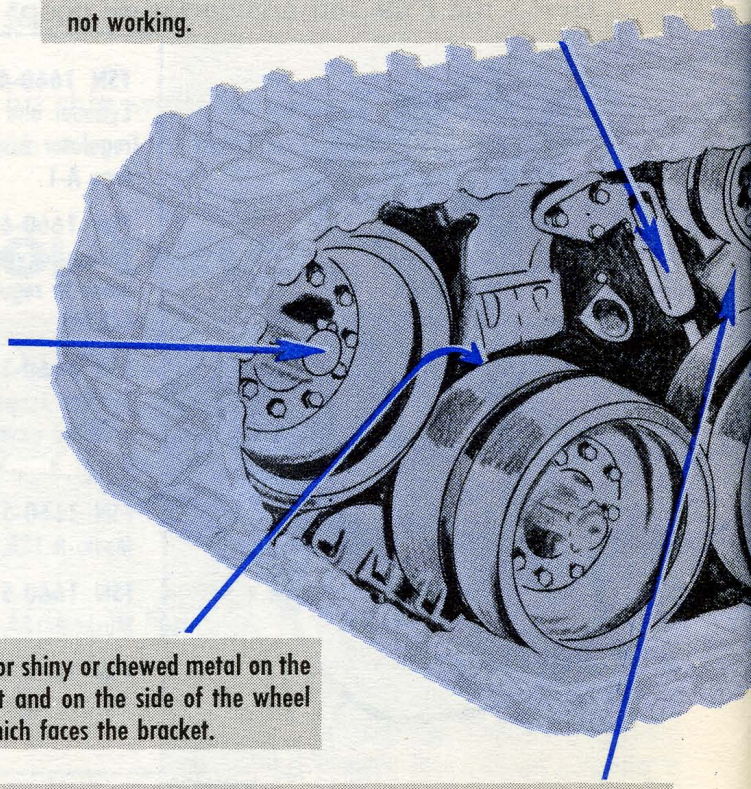
Check for loose hub and mounting bolts on the road wheels, support rollers and sprocket. Cracked paint, cracked mud or shiny metal around the head of the mounting bolt is a dead giveaway for looseness.

Look for broken or missing grease fittings or plugs. Each wheel hub should have a grease fitting on the side and a grease plug in the end.



Look for signs of overheating in the wheel hub . . . feel if it's hot—but be careful, it might give you a burn.

Check the shock absorbers in the M48A1 for signs of leaking. Tell-tale signs are a lot of oil or fluid at the lower part (smaller part) of the absorber. Small amounts of fluids may not mean trouble—but you oughta keep that area in mind. Also feel it. If it's cold the absorber's not working.



Look for shiny or chewed metal on the bracket and on the side of the wheel rim which faces the bracket.

Are the two track guide flanges on each set of wheels and the sprocket wearing evenly? Are the flanges chewed up?

Does the mounting bracket of the bumper spring show signs that the roadwheel has been rubbing against the bracket? Look for shiny or chewed metal on the bracket and on the side of the wheel rim which faces the bracket.

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TRACK DOWN TROUBLES

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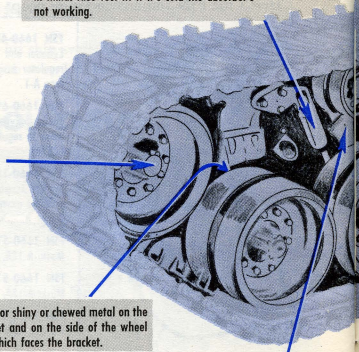


Look for shiny or chewed metal on the bracket and on the side of the wheel rim which faces the bracket.

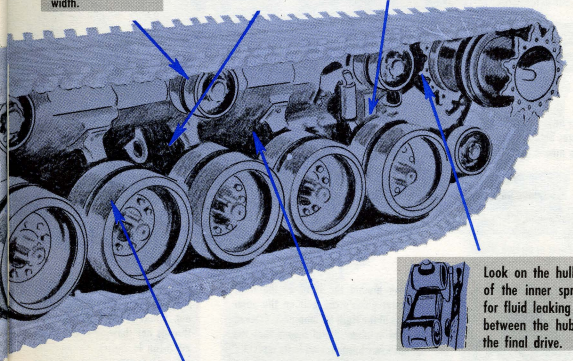
Does the mounting bracket of the bumper spring show signs that the roadwheel has been rubbing against the bracket? Look for shiny or chewed metal on the bracket and on the side of the wheel rim which faces the bracket.

Scan for frozen bumper springs, cracks or breaks across a spring coil. See if all five spring coils can be seen.

Look for loose hull mounting brackets and bolts. Chipped paint, cracked mud, spaces between the mounting bracket and hull or . . . shiny metal around the heads of the mounting bolts is the tell-tale sign.

Look at the support roller tires for flat sections across the tire width.

Check the M48A2 for cracks or breaks where the yoke is welded to the bottom of the snubber. But careful when you paw it 'cause it can get plenty hot.

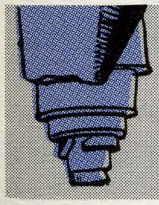


Look on the hull side of the inner sprocket for fluid leaking from between the hub and the final drive.

Check the wheel tires for uneven wear. Any signs of chunking—specially where the rubber is missing from about one-half the tire width.

Any lube leaks on the hull side of the wheel and sprocket hubs? Look on the hull side of the inner wheel discs for fairly large amounts of grease between the hub and the wheel disc.

TROUBLES



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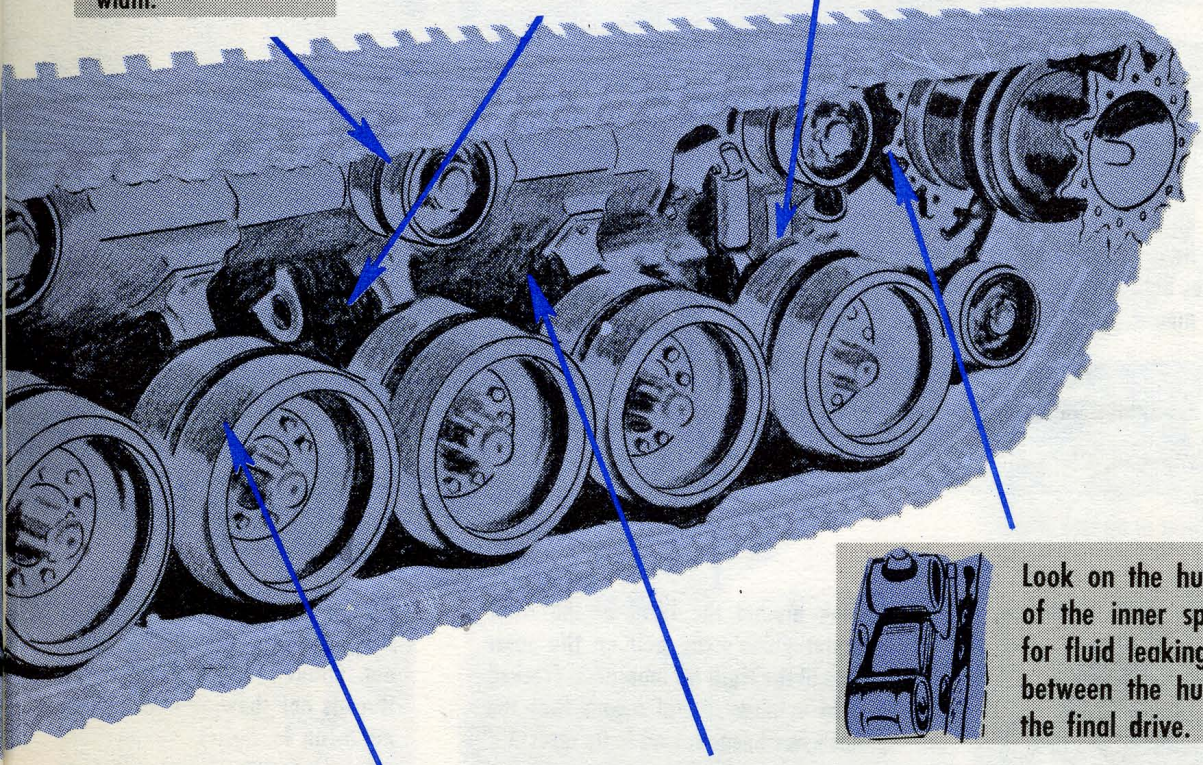

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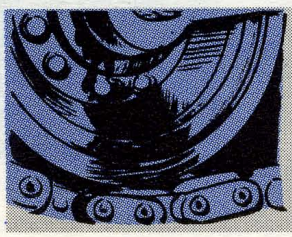
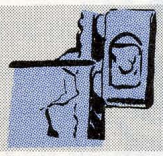
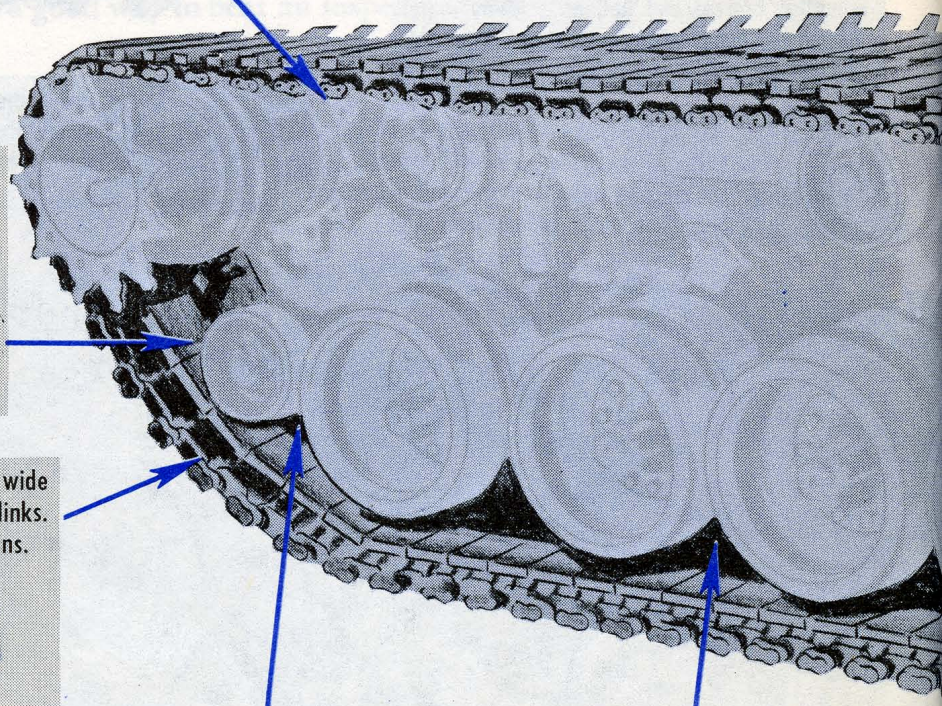


Any lube leaks on the hull side of the wheel and sprocket hubs? Look on the hull side of the inner wheel discs for fairly large amounts of grease between the hub and the wheel disc.

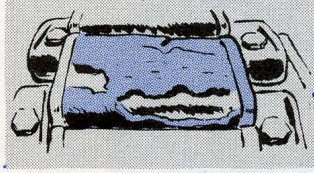
Check the track section between the sixth road wheel and the sprocket. It should curve out around the track tension idler wheel. If it's straight, the track is too tight. That is if your vehicle still has tension idler wheels. MWO 9-2300-202-20 (5 Dec 58) says you don't need 'em anymore.



Eyeball the end connectors for loose wedges. On the inner and outer sides of the end connector, look for mushroomed wedge bolt heads, and bolt not tight and not recessed in the end connector. Cracked mud or shiny metal around the head of the wedge bolt means looseness. Loose wedges also look like dead blocks . . . if the wedges next to 'em on the inside and outside are loose.



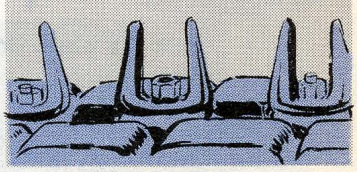
See if each track block has no more than half the rubber torn off.



Also be on the lookout for wide spaces between two track links. This means broken link pins.

Look around the head of the track center guide's cap bolt on the outer side of the track for looseness. Cracked mud or shiny metal means that the head has been moving in its recess.

On the inner side of the track, look around center guide's cap nut. Cracked mud and cap bolt threads not showing above the nut mean looseness.



TRACK ASSEMBLY

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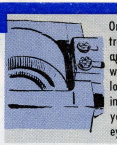
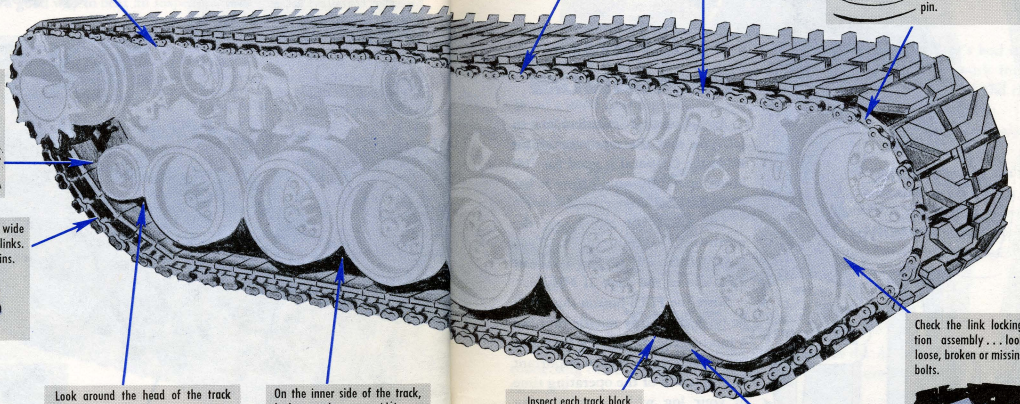
The track end connectors between the support rollers should be in line. If one end of a track link is lower than the end of the link next to it, could be a broken link pin or cracked connector. A dead block can throw it off too.

Look for breaks in the end connector and for cracks near the track link pin.



On the M48A1, check the track adjustment link pin and bearing for excessive wear . . . see if the link pin looks off-center in the bearing or if the adjusting link yoke touches the mounting eye on the wheel arm.

On the M48A2, see if the link pin is turning. Look for rounded edges on two flat sides of the head of the link pin.



See if each track block has no more than half the rubber torn off.

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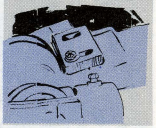
On the inner side of the track, look around center guide's cap nut. Cracked mud and cap bolt threads not showing above the nut mean looseness.

Inspect each track block to see if the rubber is worn to within an 1/8-inch of the metal.

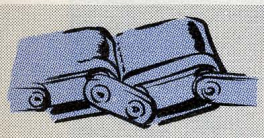
On the M48A1, check lock plate. Should be on the broad flat surface of the link sleeve and tightened down on the narrow flat surface of the link sleeve.

Check the link locking section assembly . . . look for loose, broken or missing lock bolts.



Some pubs you might want to browse through are TM 9-2630-200-14 (Aug 58), Serviceability Standards of Tracked Vehicle Suspension Components and o'course the tech manuals for the two vehicles.

ASSEMBLY



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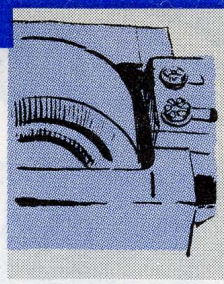

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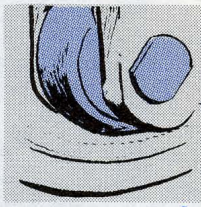
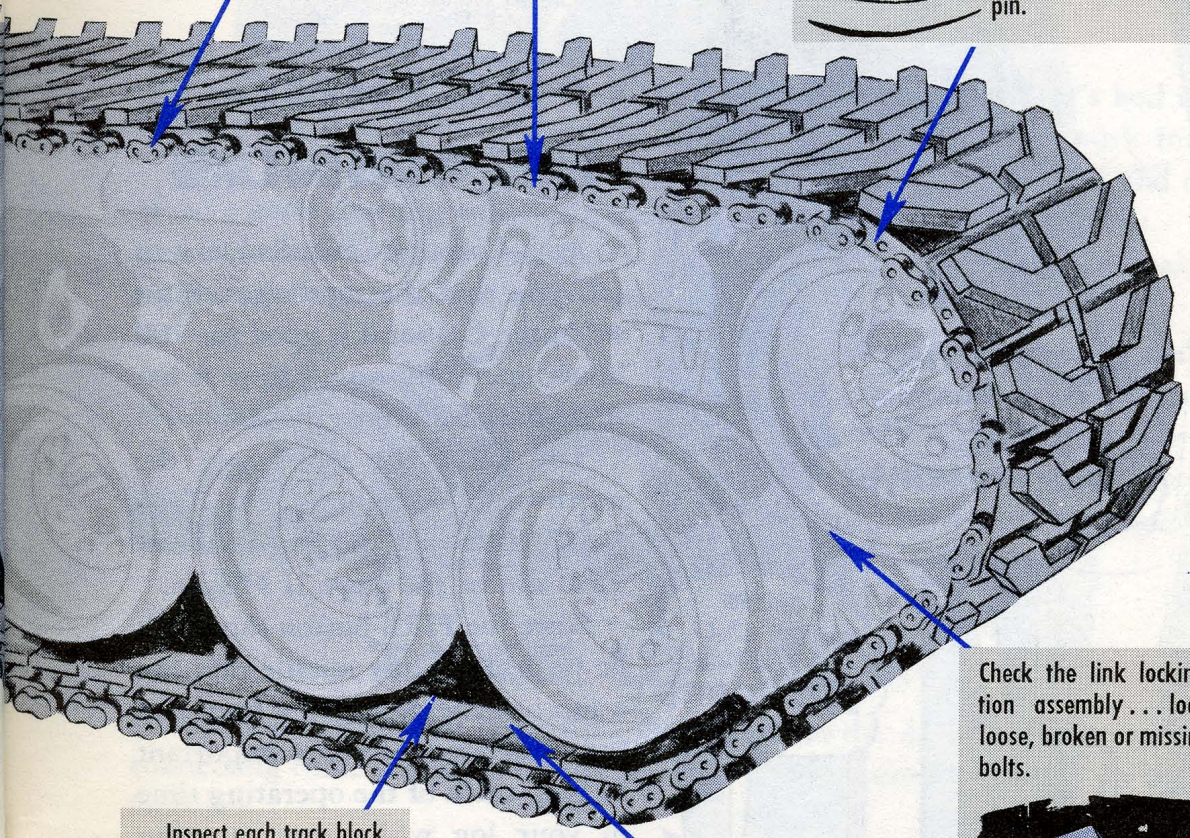
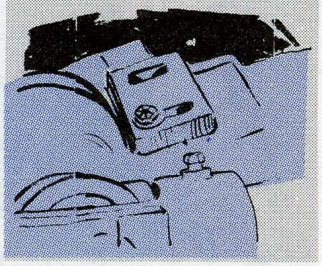


On the M48A2, see if the link pin is turning. Look for rounded edges on two flat sides of the head of the link pin.



Check the link locking section assembly . . . look for loose, broken or missing lock bolts.



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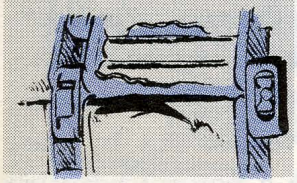

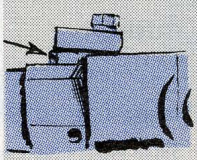

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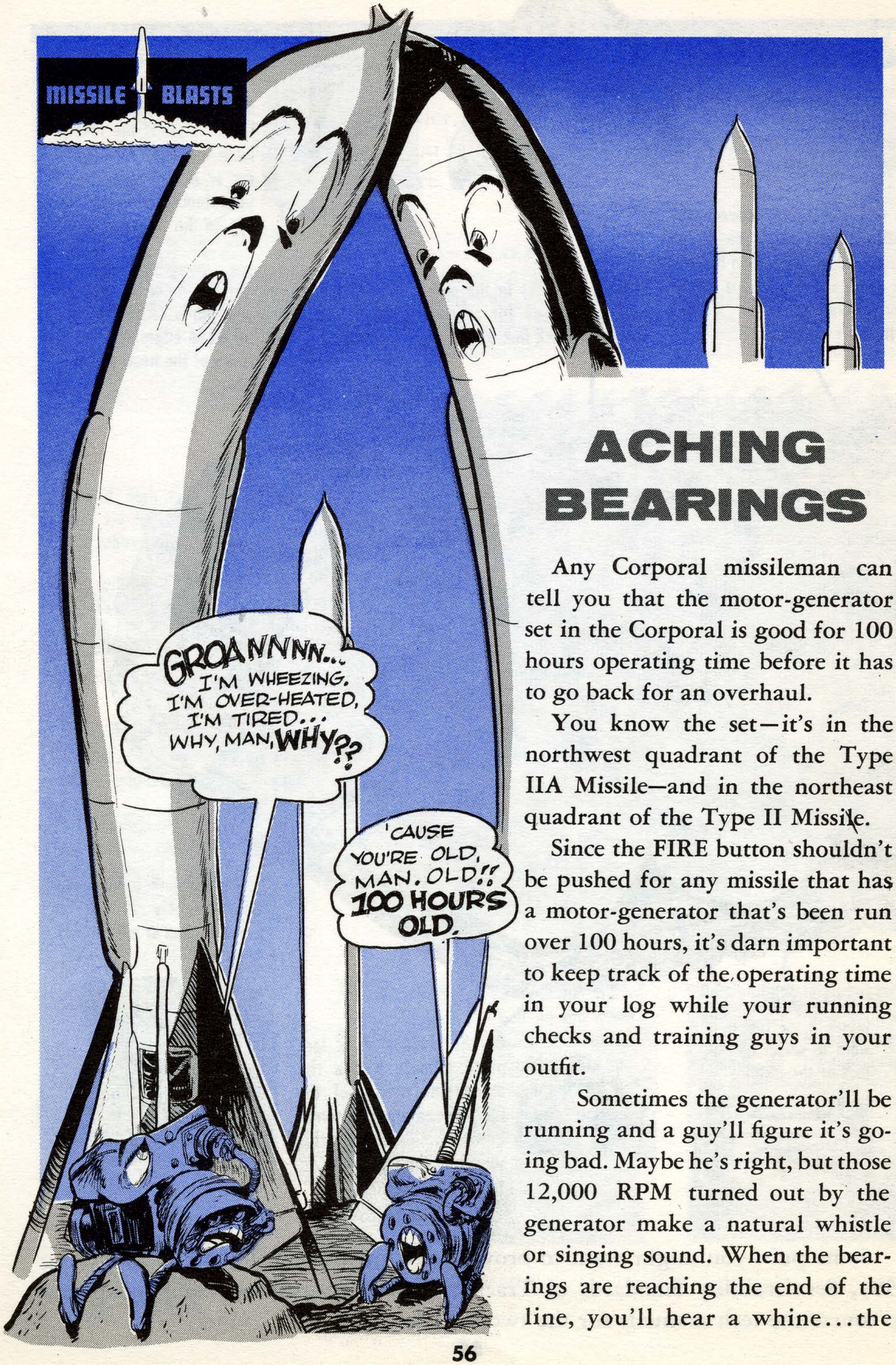


ACHING BEARINGS

Any Corporal missileman can tell you that the motor-generator set in the Corporal is good for 100 hours operating time before it has to go back for an overhaul.

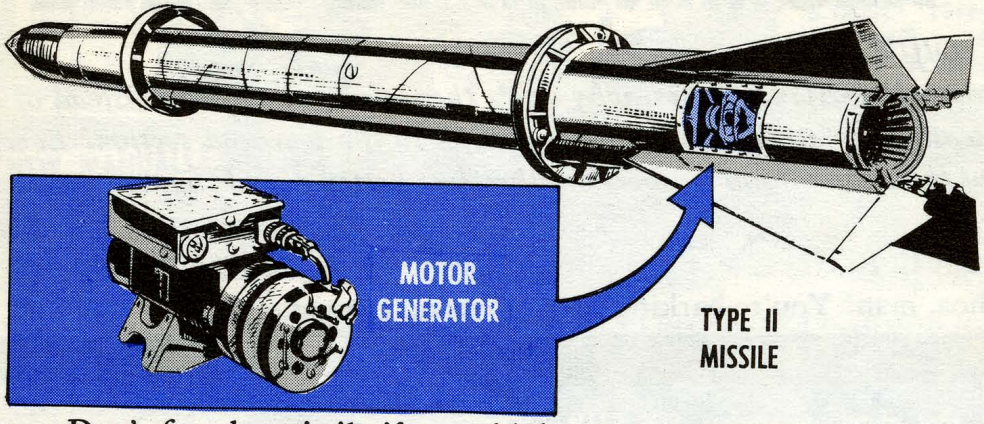
You know the set—it's in the northwest quadrant of the Type IIA Missile—and in the northeast quadrant of the Type II Missile.

Since the FIRE button shouldn't be pushed for any missile that has a motor-generator that's been run over 100 hours, it's darn important to keep track of the operating time in your log while your running checks and training guys in your outfit.

Sometimes the generator'll be running and a guy'll figure it's going bad. Maybe he's right, but those 12,000 RPM turned out by the generator make a natural whistle or singing sound. When the bearings are reaching the end of the line, you'll hear a whine...the

generator'll run rough...you might not get top RPM...and the motor'll be hot as blazes.

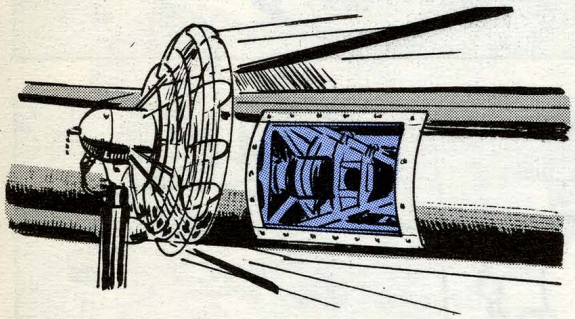
That old saying "When in doubt, pull it out" goes double with the motor-



generator. Don't fire the missile if you think the motor-generator's had it. The smart thing is to have it replaced. Your support unit'll do the work for you.

If the bearings go before the 100 hours, they want to be replaced and the set given a good cleaning with a rag dampened with volatile mineral spirits.

And before the motor-generator is put back in the missile, it'd pay to make sure the supporting studs aren't battered.

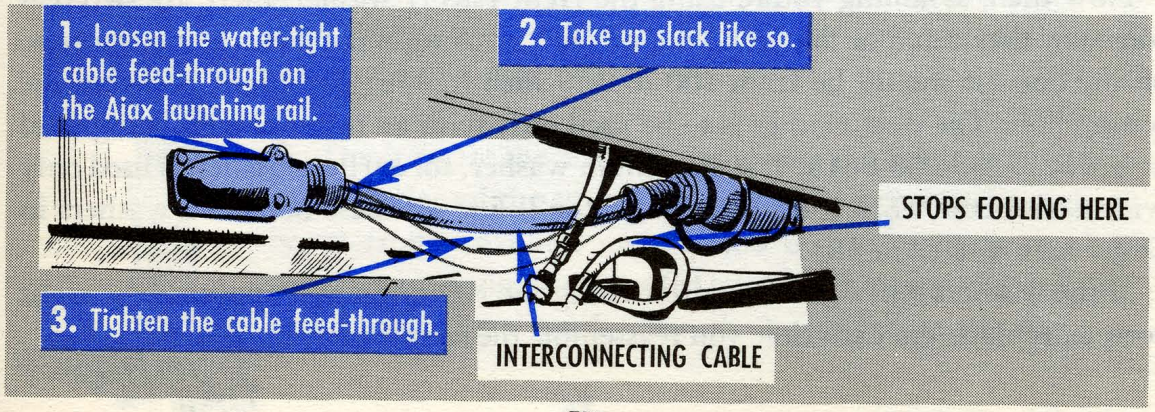


There's one way of giving the bearings longer life. If you're in a non-tactical position and you can scrounge an electric fan, you're in business. The fan'll cool down the motor-generator set while it's RPMing.

TAKE UP SLACK

Hear tell that at some Nike-Ajax-Hercules sites the Ajax launching rail interconnecting cable is getting fouled up with the wedgelock assembly on the Herc launcher.

If your outfit has that kind of trouble, run through this 1-2-3 deal.



WASHERS: ALUMINUM VS STEEL

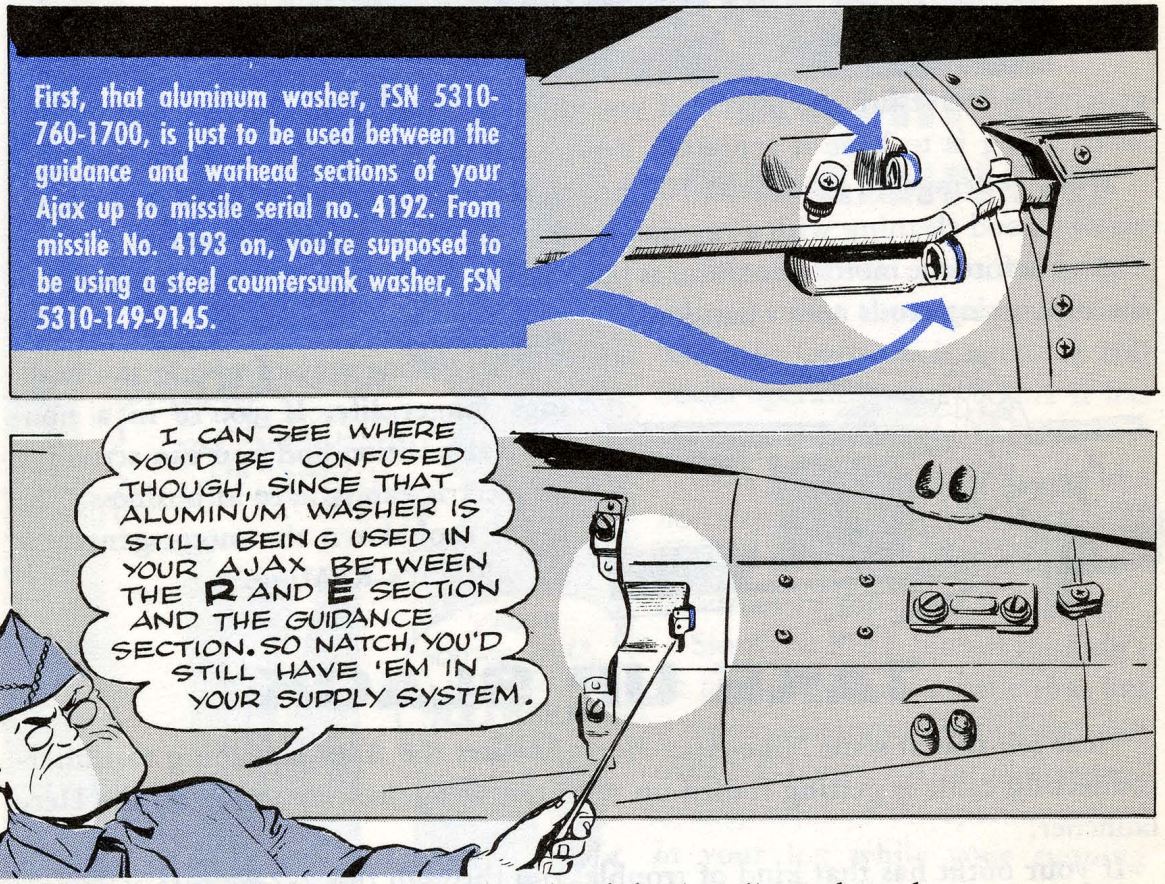
Dear Half-Mast,

In our Nike-Ajax missiles, why don't they use steel washers instead of aluminum washers to attach the guidance section to the warhead section? Every time we put these aluminum washers on, they just flatten out of shape.

Sgt C. R.

Dear Sgt C. R.,

Whoa, man! You're barking up two wrong trees at once.

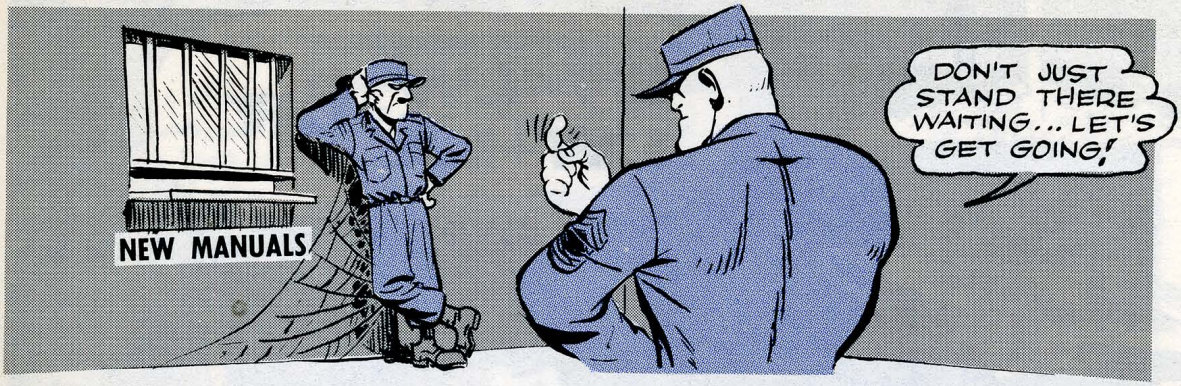


Now then, assuming you're using the right (steel) washer, there are two reasons why they could be flattening out on you. You might not have the right torque on the bolt—it should be from 100 to 140 inch-lbs—or you might be using the wrong bolt. The steel washer is to be used only with an internal wrenching steel bolt, FSN 5306-208-8613. The aluminum washer, for earlier missiles, is used only with a steel bolt, FSN 5306-337-2667. You'll find all these bolts and washers in Ord 7 SNL Y-2 (Apr 58).

If the washers still flatten out after using the right bolt and applying the right torque, replace 'em each time you reassemble the sections.

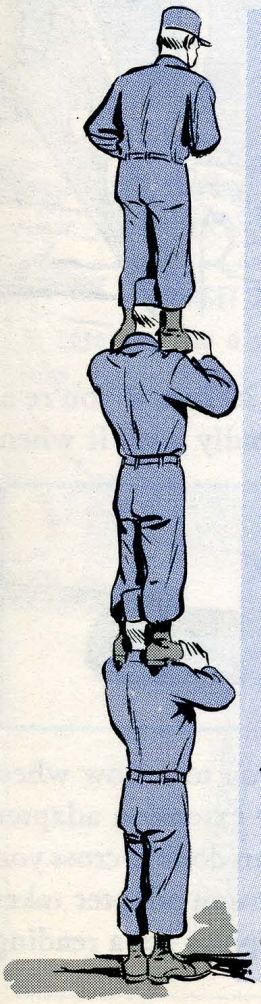
Half-Mast

DERRICK ON THE RUN



OK . . . your support unit has modified your M243 fire control platform trailer under MWO Ord Y4-W69—meaning your Nike-Ajax outfit has the new GS 17703 acquisition radar derrick in place of the GA 51144 derrick.

You'll get the full story on operation of the new derrick once TM 9-5018-2-1 is published. Until then, there're some real important things to remember when you're operating the derrick. By keeping 'em in mind, and using the old noodle, you ought to get along real well with the new derrick.

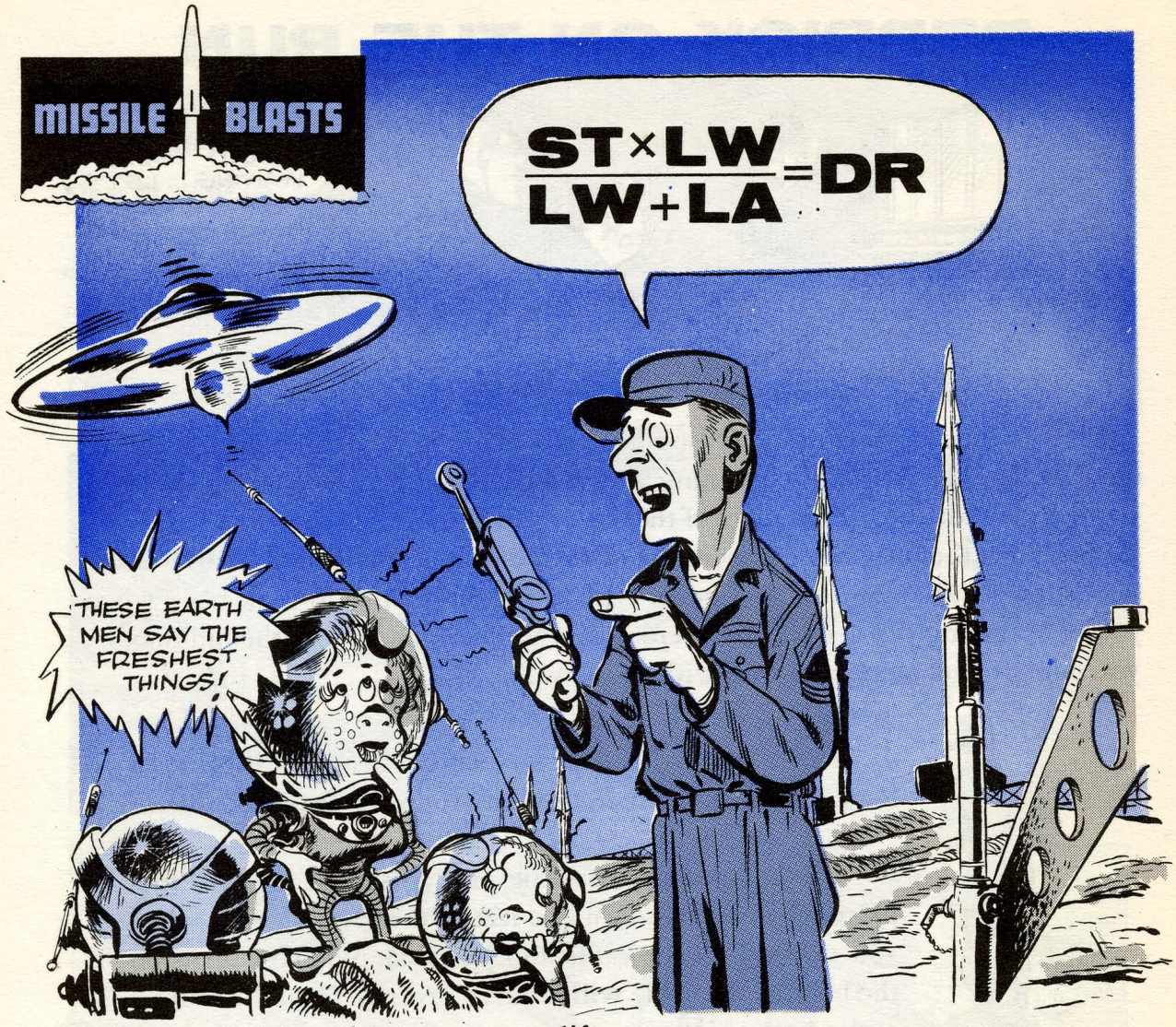


1. Turn the handle clockwise only when you're lifting a load. You turn counterclockwise to lower the load.

2. The hook on the cable never wants to be lowered to a place where it's closer'n five feet to the ground. And when you unwind all the cable and put a couple extra turns on the handle, the cable will wind in reverse. Then the cable'll really be hurting.

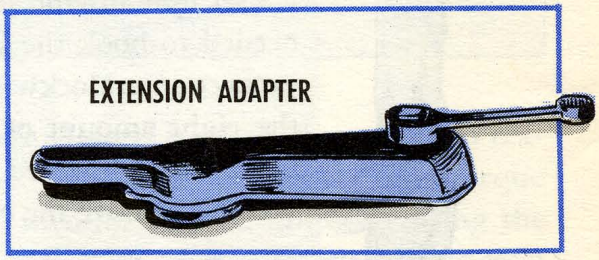
3. When you lower the harness over the acq radar—when it's set up—unwind just enough cable to give you the slack needed to hook the harness clasps on to the antenna. Ten extra counterclockwise turns of the handle will unreel about the right amount of slack. You figure on the same slack after you've lowered the antenna on the drive unit and you want to remove the clasps.

4. Don't rotate the boom in the wrong direction, that is, in the direction of the stop. The idea of the stop is to keep the boom from traveling more'n 260 degrees so's the cable won't twist. Swinging a loaded boom in the wrong direction could batter the derrick when the boom gets to the stop.



Huh? Gobblygook? Not on your life.

It's nothing but a formula and there's nothing magic about it. But, if you're a guy who knows what he's torquing about, it'd pay to get friendly with it when you use an extension adapter with a torque wrench. The Nike people call the tool a torque adapter wrench, like FSN 5120-337-2468. This kind of deal is sort of rare in torque-work, but it comes up every once in a while around missile sites.

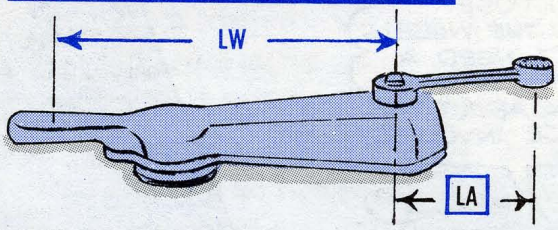


What the formula does is work out a torque reading for you to follow when you use an extension. That's gosh awful important 'cause the extension adapter adds to the length of the wrench and makes like a lever. This can double-cross you on your torque reading. You know how it goes . . . the extension adapter takes away some of the work of the wrench. So . . . it takes less oomph to get a reading you're after.

Here's how the formula works so you can get the torque you're looking for.

If you want a torque of 100 inch-pounds, multiply 100 × length of wrench, say 20 inches, you get 2,000, which takes care of the ST × LW part of formula.

SPEC. TORQUE (ST) = 100 in-lbs

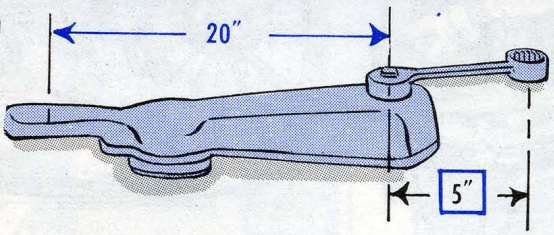


$$\frac{ST \times LW}{LW + LA} = DR$$

$$\frac{100 \times 20}{LW + LA} = DR$$

Going below the line, and the length of torque wrench and length of the extension adapter which is, say, 5 inches long from center of each socket (LW + LA). Divide top 2,000 by bottom 25 to get DR. You get 80. When that shows on your dial, stop torquing.

SPEC. TORQUE (ST) = 100 in-lbs



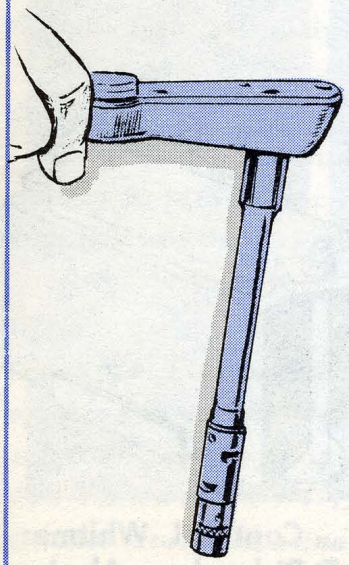
$$\frac{100 \times 20}{20 + 5} = \frac{2000}{25} = 80$$

(DIRECT READING)

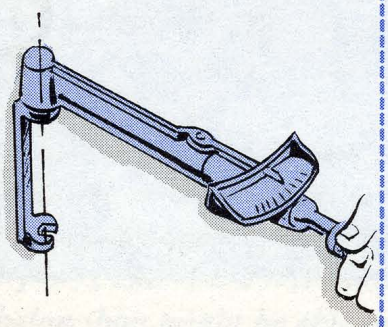
That's all there is to it. Whenever you use an extension adapter, use the formula to let you know at what point to stop when you're after a certain torque. The dial reading will always be lower than the figure you're after. If it comes out higher, your 'rithmetic is off.

FORGET THE FORMULA ON THESE TWO

In case you use a universal joint . . .

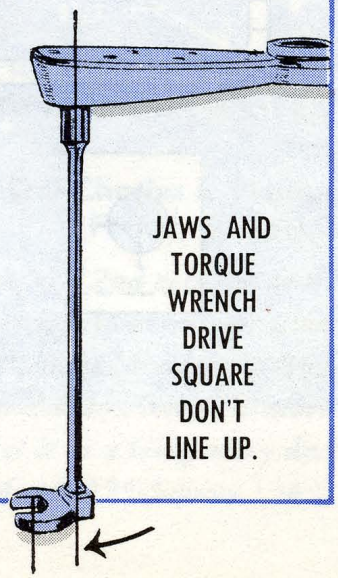


or crow's feet where the drive square of the torque wrench is in line with the jaws of the crow's feet, use the figures that show up on the dial. In other words, forget about the formula.

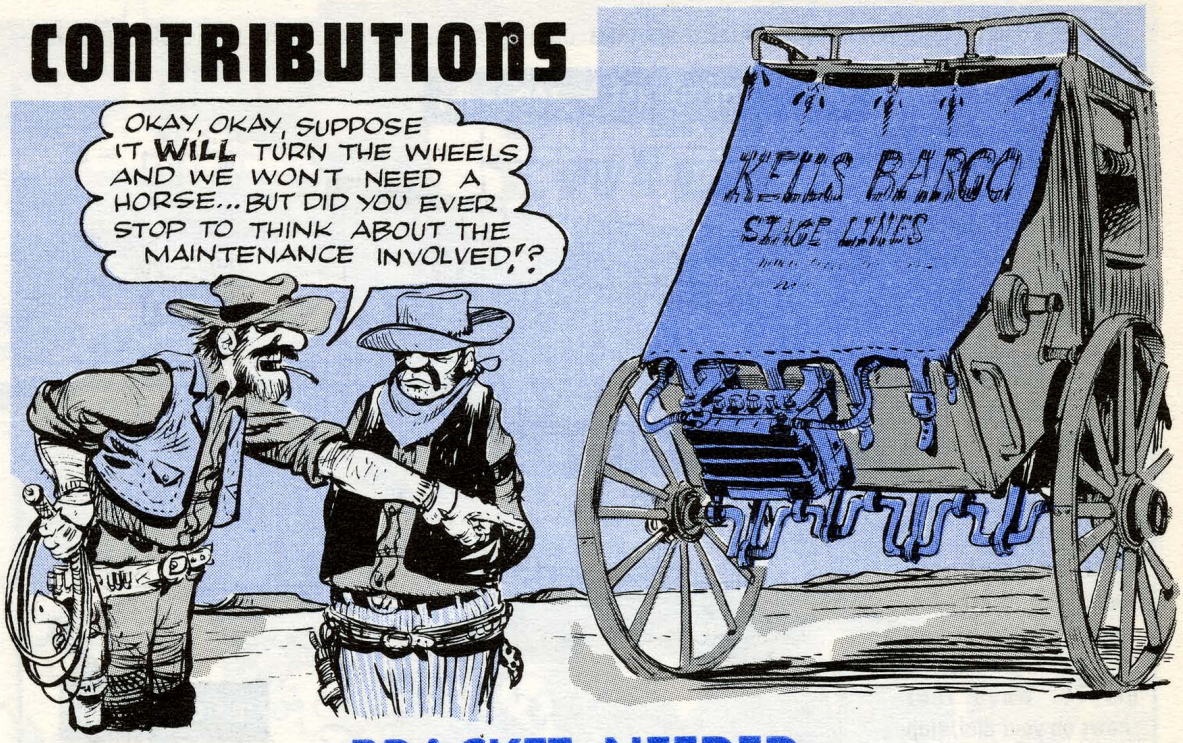


USE IT HERE

But, if your crow's feet jaws don't line up with the torque wrench drive square, use the formula.



CONTRIBUTIONS

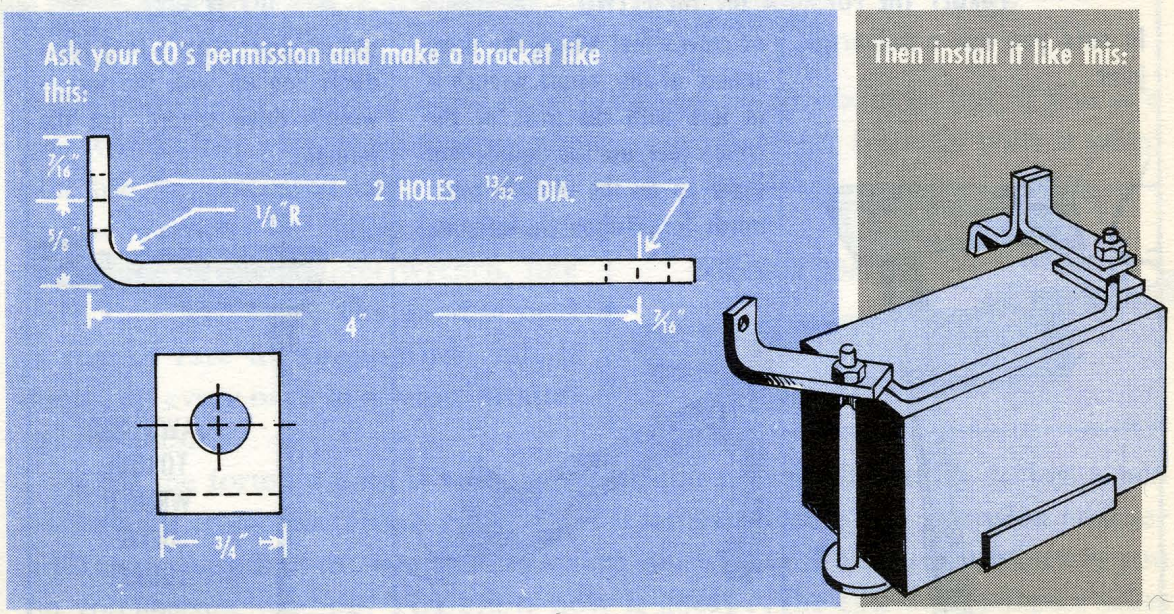


BRACKET NEEDED

Dear Editor,

With a little ingenuity you can fix those battery box frames in your 1957 1½-ton Dodge trucks, 400-series (where the box is fastened to the firewall).

Seems the framework now holding those batteries up just can't take the strain. If your truck is one of 'em, then it needs another bracket to give it a helping hand.



Capt G. L. Whitmer
Ft Richardson, Alaska

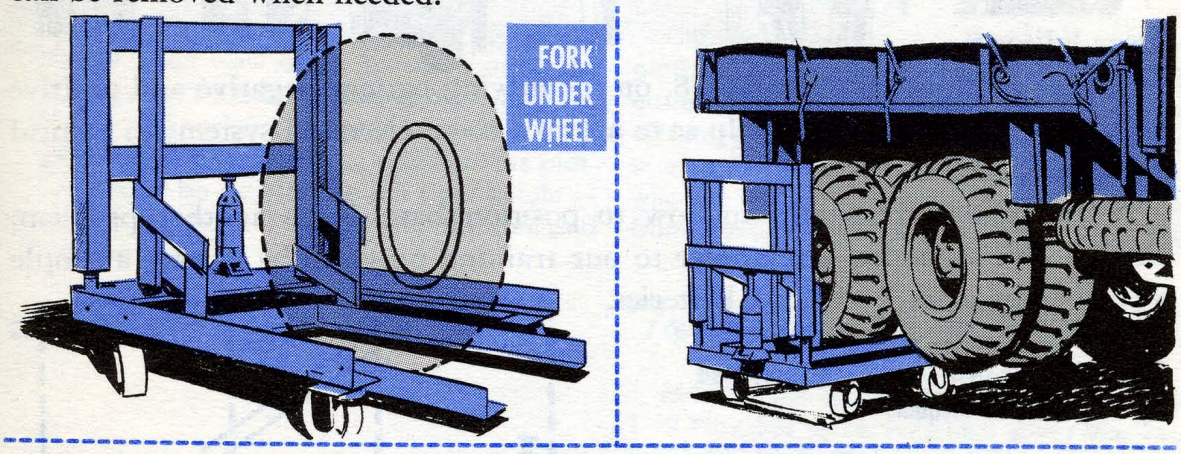
WHEELER DEALER

Dear Editor,

I made a wheel remover from scrap metal from the salvage yard here at Fort Ord to really take the time and grunt out of second-echelon periodic wheel services.

By using this remover in the shop, we found that only one man is needed to remove or replace a wheel assembly; whereby using the greased board it takes two or three men to do the same job and there is always the danger of damaging the axle threads or due to the weight of the wheel assembly injuring people. Another thing to take into consideration is the time factor. By using my remover I can complete the job in half the time.

To make this remover I used water pipe, four casters and pieces of steel ¼ inch x 2 inches and a hydraulic jack. There's no trouble in getting the jack as it's part of the vehicle OVM and 2nd echelon tool set. The jack's mounted on a base so that it can be removed when needed.



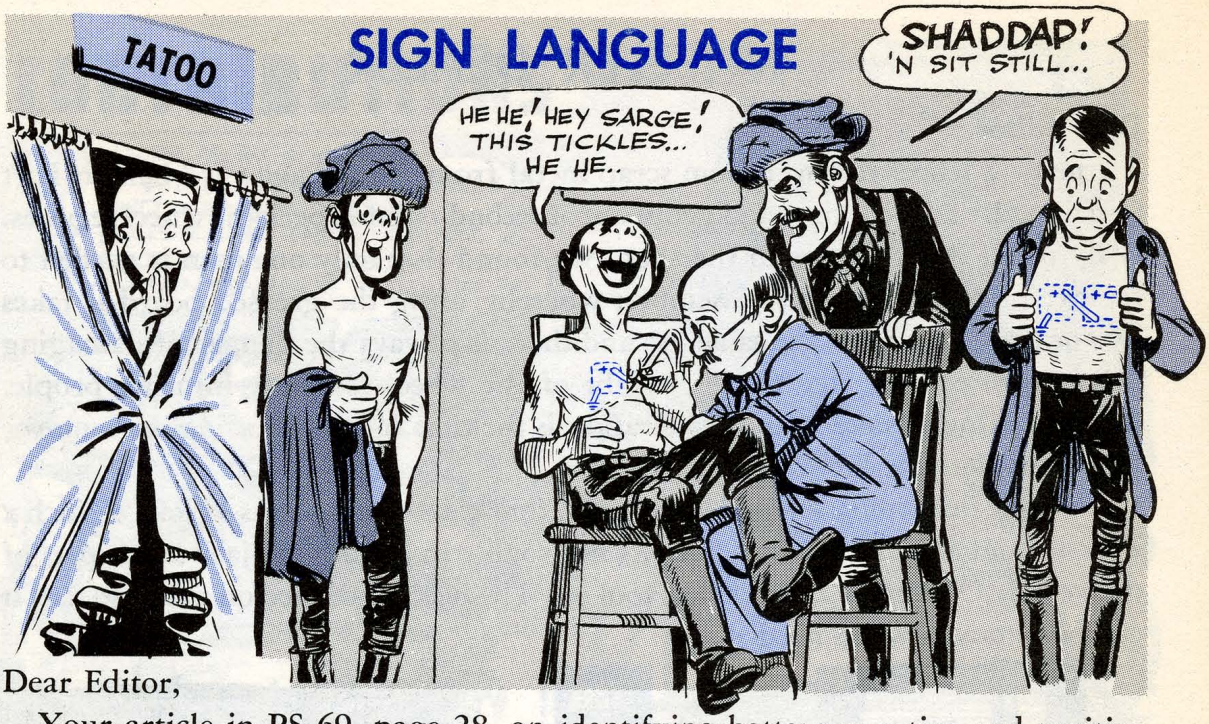
Operation is simple. First, jack up the vehicle using a home-made vehicle stand or trestle for safety; remove hub, nuts and washer and then push the remover so that the fork is directly under the tire.

Jack up the fork until the tire is resting on it and then pull the complete works out.

Make sure, when pushing or pulling the remover that the front casters are stationary to prevent the remover from moving in front. To replace the assembly, simply work the procedure in reverse.

CWO Charles R. Negron
Ft Ord, California

(Ed Note—This sure seems to fill the bill for you, since you're a 2nd echelon outfit working in a permanent shop with concrete floors. There is a tool in the system which will do the job, possibly a little better. It's Truck, lift, wheel, FSN 4910-554-5983, listed in SM 9-4-4910-J-8-51 and -J-8-63. It's authorized down to field maintenance level, and a 2nd echelon shop might be able to get it as a temporary deal or as equipment in excess of TOE, under the provisions of AR 725-5 para 15b2).

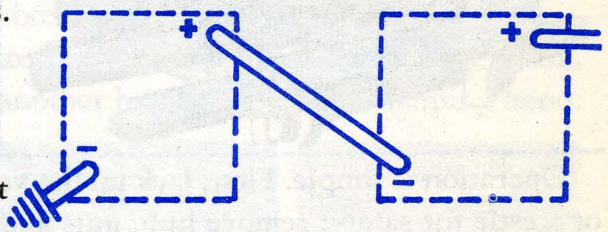


Dear Editor,

Your article in PS 69, page 28, on identifying battery negative and positive posts is a real gasser—it'll help save a lot of those electrical systems in tactical wheeled vehicles.

Training new personnel in how to position batteries is another problem, though. We've added a reminder to our training program by cutting a simple stencil and pasting it near the batteries.

This is what the stencil looks like—protected by a thin coat of lacquer:



As for putting the stencil in the right places, we suggest the following:

1. M38A1 Jeep and M170 ambulance—Underside of the battery box cover.

2. M38 Jeep—You'll need two stencils. One on the underside of the battery box cover located at the cowl, and the other on the underside of the battery box cover located in the engine compartment.

3. G741 ¾-ton truck—Underside of the battery box cover.

4. G749 2½-ton, truck—Underside of the hood—back toward the rear near the batteries.

5. G742 2½-ton, G744 5-ton and G792 10-ton trucks—On the outside of the battery box.

This idea sure saved us a lot of cases of reverse polarity. Now these untrained kids, who are only familiar with their one-battery jalopies, can see how the hook-up goes for their two-battery tactical vehicles.

Sgt E. W. Pliszka
Fort Carson, Colorado

Connie Rodd's BRIEFS

Watch your clodknockers

The tank commander is liable to take a mighty small view of his crewmen using the commander's platform latch as a foothold for their clodknockers. Stepping on the latch could cause it to break . . . and then the platform can't be adjusted to the right height — a condition that's unsafe, uncomfortable and unnecessary.

At last

Has your support unit been around to your Nike site to apply the MWO that puts a bracket on the front door of the interconnecting box cover in your BC van? The bracket saves lots of wear and tear on the fuseholders and indicating lights on the front door. MWO Ord Y4-2-W1 is Ajax . . . and MWO Ord Y28-W16 is Herc. Both're dated 17 Nov 58.

Lockwasher to the rescue

In case you're having troubles with the hand throttle and accelerator on your M56 SP 90-mm Scorpion 'cause the bolts are loosening up . . . order yourself a lockwasher, FSN 5310-639-8061. Use this lockwasher with Bolt, shoulder, FSN 5306-536-2890, you got now and you'll have your loosening problem licked.

Cut it out!

Did you know that your M48A2 tank turret platform needs some surgery? It's to make it easier for crewmen to get at the main engine oil filter and take ammunition out of the stowage racks. It's a job for your unit's welder, who can get full info on this "normal" change from MWO 9-2350-208-20/3 (25 Sept 58).

Twin poop for the twin 40s

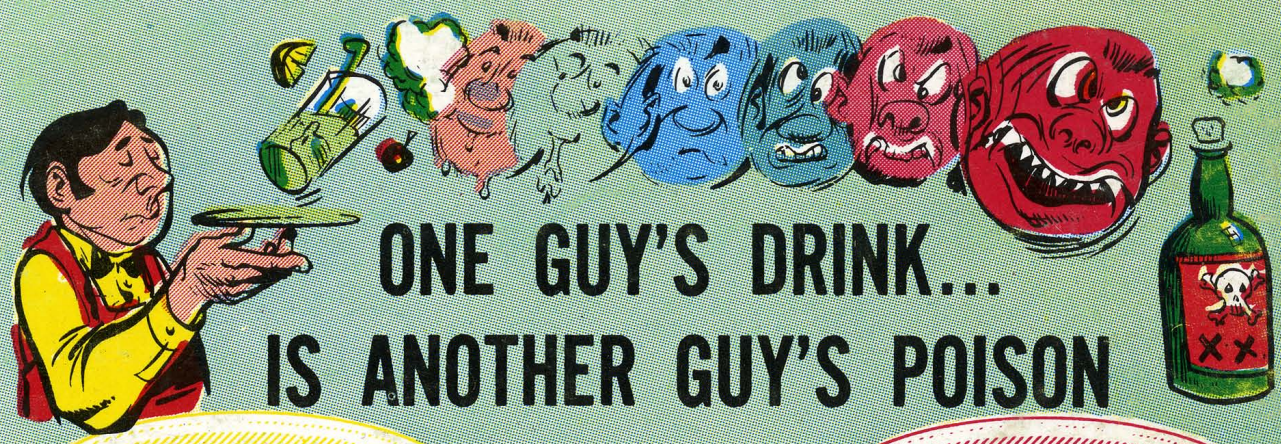
M42A1 twin 40mm SP mechanics—Change 1 (5 Nov 58) to TB 9-7218-1 gives you two new bits of info. One's an easier engine and pump timing method when removing and installing the fuel injector pump. The other's a change from 27 to 40 PSI as the minimum oil pressure for this pump at all times.

It's in the TB

What every good Nike outfit ought to have: A copy of TB 9-1400-601-20 (24 Oct 58). The TB gives a rundown on maintenance of interconnecting cables.

Sorry, wrong number

If you M56 SP 90-mm Scorpion mechanics are about to order the Nozzle, Fuel Injector, assembly listed on page 17 of TM 9-2350-213-20P . . . use FSN 2910-571-6769.



ONE GUY'S DRINK... IS ANOTHER GUY'S POISON

USE THE RIGHT FLUID

FOR BRAKES ONLY

HB
HBA

FOR HYDRAULIC SYSTEMS ONLY

2075-H
2110-H
2135-H
OH
OHA
RS
OHC
SAH